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Dissertations

read by the

Candidates for the Degree of Doctor in Medicine

at the

Annual Examination

in the

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I.

Dissertation
on
Remittent Fever.

By
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Candidate for the Degree of Doctor in Medicine.

Remittent Fever

Before proceeding to the description of remitents, it may be as well to mention some of theories which have been maintained concerning the nature of fever. Authors have found great difficulty in giving a definition to this disease it being found impossible to form one which should include all the cases which are seen

Cullens definition of fever is "languor lassitude and other signs of debility, followed by pyrexia (that is by rigors, frequent pulse, increased heat, and derangement of the functions, particularly a want of vigor in the limbs) without any primary local disease". Another writer thus modifies the definition of Cullen "After a preliminary stage of languor weakness, and defective [illegible] acceleration of the pulse, increased heat, great debility of the limbs, and disturbance of most of the functions, without primary local disease. While a third thus defines it

"fever expresses a state in which are observed, variations of animal heat, acceleration of the pulse, and general disorder of the functions with or without local lesion.

But none of these definitions are perfect, as no one of the symptoms mentioned are always to be met with in fever.

There has been a great variety of opinions advanced concerning the nature of fever. Cullen believes it to be caused by a spasmodic contraction of the capillary vessels, and, by the efforts of the heart and arteries, to overcome that contraction. Wilson in his treatise on fevers says, "It appears from some experiments with the microscope, that inflammation arises from debility of the capillary vessels, and their consequent distention by the vis a tergo. In inflammation, the debilitated vessels being comparatively few, the vis a tergo quickly and to a great degree distends them. In fever the debilitated vessels being more numerous, it produces its effect more [illegible] and to a less degree in pro-

portion as the resistance is greater. Fever and inflamation, therefore, seem only to differ in the one being a general, the other a local affection". "Fever (says Hodgee) is a disease which affects the whole system; it affects the head, the trunk of the body, the extremities; it affects the circulation, the absorption, and the nervous system; it affects the skin, muscular fibres and membranes; it affects the body and affects to disorder the mind. It is therefore a disease of the whole system in every kind of sense"

Some writers have considered it as an affection of the brain and nervous system. Other again have refered it to a disorder of the circulation. Bouillaud affirms that fever is an affection symptomatic of irritation or of general inflamation of the circulatory system. Inflamatory fever is one of the degrees of this irritation or inflamation; and the other forms of supposed primary fever are mere complications, arising sometimes from

from inflammation of the mucous membrane of the alimentary canal and its follicles.

(62) It seems, however, that although in fever the whole of the functions are morbidly influenced, the arguments in favor of the impression being first made on the nervous system, and the capillary system is strongest. The exciting cause of fever whatever it may be, produces an irregular action of the capillary system, which is soon conveyed to the rest of the system, owing to the extensive sympathy which exists between every part of the body; and it is probable that all the inflammations, and congestions, are the consequence, rather than the cause of this disordered condition of the system." (Dunglison)

Hence it is evident that notwithstanding all that authors have written on this subject, and notwithstanding it is one of the most common diseases met with in practice, the nature of fever is but imperfectly understood even at the present time;

and that there is still much to be learned concerning it.

But to proceed to the description of remittent fever and first,

The symptoms, These vary according to the mildness or severity of the disease according as it is seen in cold or hot climates or according to the state of the atmosphere.

They differ also with the peculiarities of constitution and habits of the individual attached. The disease is much more severe and fatal in ~~cold than~~ hot than in more temperate climates.

The febrile paroxism consists of three stages, but these stages are not usually so distinct as in intermitents, especi in the severer forms of the disease.

The patient is sometimes attacked suddenly without any warning, but more commonly there are some premonitory symptoms and occasionaly he may feel slightly unwell for several days. There may be a feeling of

lassitude, he is unable to endure any great exertion either of body or mind, and his appetite is not as good as common. After these symptoms have continued for a longer or shorter period there comes on a paroxism of fever.

The attack commences with great languor and uneasiness. There is a sensation of weariness in the muscles there is a dull pain in the loins which extends through the limbs, the patient is continualy desirous of changing his posture at the same time there is a feeling of weakness which resists all attempts of the patient to move himself. The uneasiness and depression of the body extends itself to the mind, the patient is incapable of any severe mental application or of fixing his attention long on any one subject, but his thoughts are continualy wandering from one object to another and this sometime to such a degree as to

amount to delirium. But delirium is not so common in this as in the second stage of the paroxysm. The pulse in this stage is smaller and usualy more frequent than natural. The skin becomes pale and shrunken and sometimes of a yellowish colour showing that the liver is affected. There is dispnea, anxiety, and a sense of weight about the chest and epigastrium showing a tendency of the fluids towards the centre.

The patient complains of cold, then of chills, sometimes alternating with a feeling of heat. There is a diminution of the secretions There is loss of appetite frequent nausea and vomiting. "The rigors, are rarely, so great as in intermitents, and sometimes the the sense of chillings is not so, or almost wholly wanting. At times, vague chills or a sensation as of cold water trickling down the back, alternating with flushings of heat, until ultimately the fever is completely established" (Dunglison)

The skin which was before pale, becomes flushed and hot, the pulse becomes strong and full and more frequent. The sensibility which was before diminished is now increased. The patient is disturbed by the least noise and the light is painful. There is pain in the head frequently accompanied with a throbbing sensation. After these symptoms have continued for a longer or shorter period, a gentle sweat breaks out, which brings partial relief to the patient. But still the febrile symptoms are not wholly removed there is only a remission. This remission continues but for a short time, when another paroxysm comes on and frequently in an aggravated form. And these alternations continue until, either, the remissions becoming larger, the disease finally ceases, or else the disease gradually runs into the continued form of fever.

Remittents are most commonly complicated with disorder of the liver. The symptoms [illegible]

give it the name of bilious fever by which it is known in many parts of this country. Inflamation of the mucous membrane of the stomach and intestines is also most commonly present. "One of the most important circumstances to be borne in mind in the history of remitent fever is, the tendency to local hyperaemia, or inflamation the presence of which gives the peculiar character by which the remitents of one season are distinguished from those of another. In all cases perhaps the lining membrane of the stomach, or small intestine, or both, is implicated; and hence the term gastric is universally applied to it". (Dunglison) When the disease is about to prove fatal the severity of the paroxisms, the remission become less and less distinct, the tongue is covered with a thick, dark colored coat, and all the symptoms of typhus come on; with a low muttering delirium diarrhea tenderness of the abdomen &c.

In the southern parts of this country this disease sometimes assumes a very virulent & malignant character. The paroxisms are extremely violent, with great prostration, anxiety, dispnea, oppression about the epigastrium, attended with excruciating headache, and the disease sometimes proves fatal during the second or third paroxisms, unless relief is obtained.

The Causes of Remittent fever

The cause, most usually assigned, as producing both remittent and intermittent fevers are certain emanations arising from putrefaction, decaying vegetables and floating in the atmosphere. Concerning the nature of these exhalations there has been much speculation. The most common opinion is that it arises from the decomposition of vegetable matters, others believe that it may arise also from the decomposition of animal substances. Some have maintained that it consists of small animalcules floating in the air.

others ascribe it animalcular decomposition.
As these fevers prevail most frequently in marshy districts the exciting cause has been called marsh miasma or marsh poison. But this name has been considered as objectionable because these fevers are found frequently in districts remote from any marshes, nor is it every marsh which exhales the the obnoxious poison. It has been substituted the name of malaria or bad air.
It appears that the emanations causing remittents and intermittents differ in some ways as they do not usualy prevail at the same time in the same place.
Some ascribe this not to any difference in the poison itself, but to a difference of temperature. They assert that the same exciting cause existing in each case, the intermittent fever will be most prevalent in temperate the remittent in hot climates. "It is frequently observed that during the more temperate seasons

the regular intermitents prevail and for the most yield readily to the ordinary means. In proportion as the season becomes hotter and more moist a reduplication and protraction of the paroxysm takes place till the disease becomes to differ but little from the continued fevers. (Wilson on fevers)

Others believe the difference to consist in the degree of intensity in which the miasmatic poison prevails. When a less powerful cause is applied intermitent fever being the result, and a more powerful cause remitent. "In General, (observes, Dr. Hunter) the fevers in the most healthy season are generally intermitents, in the rainy and other unhealthy seasons, remitents". Heat has generally been assigned as a cause of fever, but it is doubtful whether fever is ever produced by heat alone. It acts rather as the predisposing than the exciting cause, rendering the system more irritable and causing an

erethism of the nervous system and of the stomach and intestines, and thus making the person more liable to an attack of fever. In fact so much is provided they are dry fevers are not more prevellant than an cold. Remittents prevail most frequently and in their most virulent form where there is a combination of heat and moisture. Hence in warm climates where the land is low and marshy, or liable to be overflowed by the waters or in plains situated along the line of rivers which overflow their banks the disease is very fatal.

We are informed that the Arabs when they wish to be revenged on the Turks of Bussorah, break down part of the bank of Euphrates, by which the districts in the neighborhood are laid under water. The stagnating water, and dead fish soon become putrid, and dreadful fevers generaly of the remitent kind are produced. The fever induced by a single inundation of that

deserts have been known to destroy twelve or fourteen thousand of the inhabitants of Bussarah" (Pilsan). Sleeping in the open air after exposure to the heat of the day frequently brings on fever in that climates. Sometimes the disease will prevail among strangers when the native inhabitants of the place are exempt from it. And cases are related of fevers arising on board ship, from some of the sailors sleeping on shore, even though they were not prevelant in the place at the time. Remitents are very common in the western part of the United States, during the later part of summer where they are known by the name of bilious fever and are believed to be caused by disorder of the liver and an excessive flow of bile. 66 The bilious remittent, however prevails at certain seasons every where, and at times it is observed to be decidedly epidemic and to visit regions in which it had been

but rarely seen before." (Dunglison)

"In sporadic case of remittent both of the simple [illegible] the malignant form malarious influence may not perhaps be necessary to engender the disease. It may be sufficient that gastro-enteritis is induced in order that under favorable circumstances it may assume the remittent form" (Mackintosh)

Treatment of Remittent fever

This may be divided into that which is to be employed during the paroxysm and that during the remission. The indications of treatment to be employ during the paroxysm are to palliate the symptoms as they appear to cease from excitement and prevent the curative of the remission and thus bring the fever as near the intermittent form as possible. The treatment should be antiphlogistic and sedative. For the remission of brisk excitement purging is unavoidably the most powerful means in our possession

In some of the forms of this disease, blood letting is not necessary nor can it with safety be [illegible]. But where there is strong arterial action, with high febrile excitement, or where there is local determination to any of the important internal organs, bleeding is a most important remedy. So also where there is excessive irritability of the stomach accompanied with retching and vomiting so that no medicines can be retained, prompt efficient bleeding will frequently remove all these symptoms. In the severe cases which occur in more southern latitudes, it is said that venesection, will frequently not only give immediate relief, but will often cause the succeeding paroxisms to be more mild, and even change the whole character of the fever, making it more tractable in its form. Even in cases which exhibit strong marks of depression the lancet may be used with advantage if done early.

But in these cases general bleeding if employed it must be only in the first or it may induce fatal prostration.
Many physicians depend almost wholly on blood letting followed by large doses of calomel. Calomel has long held a high reputation as a remedy in this disease It is given as a cathartic, and also as a ~~revul~~ revulsent and deobstruent in cases where there is congestion of any of the internal viscera. It is also believed to be particularly efficacious in disorders of the liver a viscus which is commonly affected in remittent fever. To produce these effects it is usually recommended to give the calomel in large and frequent doses so as to produce a quick and decided mercurial impression on the system.
"And that it should be continued, until the gums exhibit its influence, or the evacuations become conspicuously bilious. Should it not prove cathartic any of the gentle cathartics recommended under the head of simple remittent fever may be employed.

Calomel has also been recommended as a diaphoretic in fever. By calomel the skin [illegible] Night sweats at the time more proved a resolution of the fever was brought about and the patient happily recovered. And we remember no instance, where [illegible] freely given and persevered in till it showed itself in the mouth; which was not attended with the happiest consequences. The use of drastic purgatives which was not so common, in remittent fevers is now generally reprobated; and some have gone so far as to reject cathartic medicines altogether with the exception of castor oil or some of the other mildest laxatives. As a general rule the less irritant cathartics are preferred.

The cathartic salts are generally recommended in this fever being less irritating and more refrigerant than the other cathartics. They produce this effect not only by the evacuation which they occasion but they have also a direct sedative action.

The strictest quiet both of body and mind should be enjoyed, all unnecessary noise prevented, the light partially excluded; the room kept well ventilated and the temperature regulated according to the feelings of the patient. Iced water may be freely allowed, iced lemonade may also be given together with the other acidulated drinks.

Where the stomach is so irritable that food is not be retained, the thirst may be alayed by sucking pieces of ice to dissolve in the mouth. When there is incipient mortification of blood it should be checked by the application of poultices over the part; by the use of counter irritation to the surface and sinapisms to the feet. The cold affusion has been recommended. Where the heat of the body is steadily more that of health and the skin dry, also sponging the surface with cold water, or sometimes warm water is practiced.

When there is not inflammation of the stomach the reasoning remedies may

be employed. The best of these as a reducing agent is antimony, either the James' powder or what is more commonly employed the tartar emetic. Ipecacuanha is also given occasionally, but is most commonly given in combination, either in the form of Dover's powder or combined with calomel and opium. Emetics are sometimes necessary to remove morbid secretions from the stomach; for this purpose ipecacuanha is preferred. Whenever there is a distinct remission the antiperiodic remedies should be employed. Of all [illegible] quinine is the one almost entirely relied on at the present time in the treatment of both [illegible] and [illegible]. When there are any local congestions this remedy should not be employed until these have been removed, as it might increase the mischief by increasing the force of the circulation. It is usually recommended, but more especially in

the severe cases to give the quinine in large and frequent doses so as to make a strong impression on the system and prevent if possible a relapse of the paroxysm. Life long residence in the climates of the Indies, often depends on the management of a single paroxysm by the judicious employment of the lancet, a purgative, and two or three large doses of the sulphate of quinine. During convalescence the diet should be carefully regulated as any excess in eating may bring on a relapse. Where the disease has been severe stimulants may be required. The mild tonics and bitters may be given.

James Preston

II.

Dissertation
on
the Demerits of Empiricism.

By

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Candidate for the Degree of Doctor in Medicine.

The demerits of empiricism

Before proceeding to discuss the demerits of empiricism permit me to say that by it I mean all departures from or perversion of the science of medicine as taught in medical colleges generally at this time. Although the term in its most limited sense, may be applied only to those who venture on their own experience without regard to system, yet the same will apply with equal force to all quacks.

Thompsonians, Homœpathicks and all their kindred deceivers have tried to borrow enough from the profession to form a separate system. But never to my knowledge has the result of their labour benefited their fellow men. In order to make my ideas intelligible I shall endeavour to show that the character and standing of the medical science is such as to merit and deserve exclusive patronage. Then show the nature and tendency of empiricism.

All who are acquainted with ancient history are well aware that all practice was empirical, and not only so but surrounded with all kinds of sophistry and deception for nearly four thousand years. According to the most authentic account of the early periods of the world no regular system had been established until about four hundred years before Christ. Very few if any correct deductions were made from experience until the time of Hippocrates. He appears to have been the first man in the profession who "judged carefully for himself and adopted those sentiments which seemed to be founded in sound reason". The high honour of having originated the science of medicine was a just tribute of respect bestowed on him for the numerous benefits arising from his devoted attention to the improvement of the healing art. The darkness that had so long obscured

the profession than began to give way. and although the facilities for obtaining correct knowledge was exceedingly limited, yet the productiveness of his mind and the purity of his motives reflected an honour and stability on the profession that has lived along with his fame, and will continue to live and grow brighter and brighter until virtue and fame shall be extinguished or time itself shall die

We do not think that any man should be worshiped because he has made great advances in the acquisition of knowledge or shed a bright lustre on all his works. Yet there were many connected with this science whose memories we love to cherish because the benifits conferred by their toil demanded it of our honors. We not only love to read their works and ponder their opinions, but improve by their example and imitate their skill. Those men have passed away but their memories perish not While we thus look and admire, we shall

never forget, that many are now engaged in the same cause with equal ardour whose reward would be far to small if dollars and cents were to form the sum of it. But no we feel that generations yet to come will ascribe praise to all men who have advanced the interest of such a cause.

As a testimonial of the value of such men I point to medical colleges medical societies, medical associations of various kinds. I point to Hospitals Almshouses. Asylums as sure evidence of the competency of the medical faculty. I ask you to compare medical colleges with others. If we estimate their utility by the talents and learning of their teachers I hazard nothing in saying they occupy as honorable a position as any others. If we judge of their usefulness by the collateral facilities they possess for imparting correct instruction they have no equals. Nor are the requirements in them for graduation obtained with less talents or labour than the degrees of other colleges. If the members of the bar or sacred

desk who has been commissioned to occupy these responsible stations are entitled to more confidence than the mere pretender then so is the physician equally above the empiric. Indeed it is through this medium alone that we have a right to expect merited distinction in this profession. It is unsafe to repose confidence in the ability of any man to treat successfully the various diseases of the present day without his having been inducted to his profession through a regular course of study. This is the only pillar on which the perpetuity of the science depends.

This science has for its foundation the everlasting principles of usefulness and truth and it has stood and it will continue to stand from age to age and from century to century unimpaired by the rise and fall of all empiricism for they have not a vestage of intrinsic value except it may be now and then a speck borrowed from this mighty temple or a crumb gathered from some unworthy source. How far Medical Colleges

medical associations have succeeded in diffusing and maintaining correct principles I leave for others to determine. But I think all will agree with me that the talents and acquirements of medical men forms no small part of the intellectual wealth of the world. The very nature of the profession is calculated to awaken every faculty of the human mind. The object of their attainments is the ability to cure all diseases. The incentive to action is as great as they are diversified and painful. If it were an easy matter to treat successfully all the diseases that come before us then we might with propriety place a low estimate on the great capital of medical knowledge that has been accumulating for so long a period. But this is not the fact. The experience of all mankind from the birth day of disease to the present moment is calculated to teach the importance of cultivating this science with peculiar care. Most medical men at least have been alive to this

sentiment for many years. They have not been satisfied to rest their exertions without great efforts to elevate and render the science still more and more useful. They have tried every means to elicit inquiry, to arrive at truth, and to establish a common interest in the general prosperity of the cause. They have been liberal and bountiful in their awards of money and respect to all who have contributed to the attainment of this object. Thus has an enquiry been awakened the benefits of which extend to every branch of the profession. Such is now the condition of each department that whether taken separately or together they exhibit as much profound thought deep consideration and learned study as any other enterprise recorded in history. The anatomical structure of the human system is fully understood. The form, the office and the requirements of every organ has been the subject of careful investigation. Physiology too has been examined with great diligence

Those laws by which vitality and healthy action are maintained have been unveiled with nice precision. These are interesting studies and would naturally awaken the attention of every profound scholar. Indeed few can be indifferent to know those great principles by which "we live move and have our being." But a far greater interest is felt by the physician who knows they are the groundwork of all surgical and pathological study. Additional interest may arise from the fact that these are the most permanent as well as interesting branches of medical science. Other departments are often undergoing changes. But these know no increase or diminution. The opinion of men may change in regard to them, but man as he came from the hand of his Creator is endowed with a perfect form and phenomenon by which life and health are maintained. This form and this phenomenon constitutes the true principles of Anatomy and Physiology.
While these harmonize and remain

unaffected by disease or accident his only requirements are healthy food, air & to repair the natural loss occasioned by the continued action of the several functions of the body.
All who legally enter the profession are so instructed in these that they can apprehend and appreciate its morbid changes.
These changes constitute another very important part of this science. No one has prosecuted the study of anatomy and physiology long without finding his way obscured with pathological changes. It is in view of these that we attach so much importance to the former branches. At the time when Hippocrates, Galen and many others were making such untiring efforts to perfect the science of medicine their exertions were embarrassed by the laws that forbade dissections and post-mortem examinations. But now we have a different state of things. Never will the votaries of this science rest their labours until all diseases are described and changes in them shall cease.

They are arranged also in such a manner as greatly to assist the physician in the performance of his duties. Clear and correct nosological views are as important to the practitioner as order is to the mechanic.

When he fully understands the relation that exists between diseases and the place which properly belongs to each one, he has obtained a great advantage in the prosecution of his labours. The department of surgery has attained a high standing among the numerous branches of this science. The enterprise in this department is so great that man scarcely knows the spot in his fellow man where the surgeons knife has not entrance. It has found its way to the parotid gland with safety. It has removed deformities the most appalling and diseases the most dangerous. But the extension of the limits of surgery does not so much excite our admiration as the improvement in the manner of relieving those for whom the knife is the only remedy.

The knife has always been a terror to some even when guided by the hand of the most talented and skilful operator. So far then as they have succeeded in simplifying operations they have rendered the profession and the community an essential service. Many thereby will receive the benefits of their skill who otherwise would have been altogether inaccessible. Many of the operations that have caused extreme pain and great dread, some that have inflicted suffering almost beyond endurance as well as great hazard are now performed with ease and safety. While the departments have been considering have expended much time and talents still we do not find an insurmountable barrier to the advancement of this noble enterprise. Dark and gloomy as are the manifold diseases of the present time; painful and destructive as they have been to happiness and life; varied and insidious as their approach has often been, they are not unsearchable.

Almost all created things have been explored

to finer remedies are not without effect. Chemistry, Botany, Mineralogy &c have all unbosomed their rich treasures and bade the pt. gean welcome. The God of nature seems to have designed that he should drink at every fountain. At last the field is vast and almost boundless from which he draws his remedies. The form in which these are most useful, the method of administering them and the circumstances under which they are most advantageous has been demonstrated in so many ways and on so many occasions that no just ground of doubt remains as to the competency of the medical faculty.

In short to deny their exclusive right to confidence is either to shut our eyes against the plainest principles of truth, or deny ~~our~~ our own convictions of sound reason. This I think must be the inevitable conclusion of all who take the trouble to examine the true merits of this science. It is a generally admitted fact that the more knowledge and experience an individual has in relation to his particular calling

the more confidence may justly be reposed in his ability to accomplish his undertakings. This is an axiom that will apply to all the transactions of life, and yet some will make the very place where it applies the most appropriately an exception. What system or mode of practice except the one I have been considering comes to us clothed with learning and experience? What other one bears upon its character the impress of reason? None: no not one. Never have they realized to the world what they profess. Most of them have been decoyed in some low haunts of indolence and vice, for no other purpose but to gain money. It is true empirics court distinction. They are anxious to be thought great but are to indolent to become so by industry and skill. They would be considered wise and humane. But their wisdom is deception and their humanity is treachery. What savage of the wilderness so base as to pretend that they have something new and valuable when they know they have not? And who but an infamous

wretch could trifle with the afflictions of a fellow being by withholding by patent or otherwise a valuable remedy. The principles of Thompson and all patentees of medicine should cover them with everlasting infamy.

It is painful to think that any one should so far degrade the noble powers of the human intellect as to countenance such ignorance and depravity as these manifest. There is not intrinsick value enough in any patent medicine to recommend itself to public favour. The Thompsonian practice has become the most extended system of quackery known at this time, yet according to the acknowledgement of the originator of it, none could be more incompetent than he. In his book called "Thompsons practice" we find the following language. "I had no other assistance than my own observation and the natural reflection of my own mind unassisted by learning or the opinion of others. This was said in regard to his qualifications for originating a better sys-

tem of medical knowledge than the world had ever before enjoyed. A large part of this book is devoted to a narration of the aggrievances of his life and the treatment he has received from what he terms "the regular doctors" This is done evidently to gain the sympathies that are generally bestowed in rich profusion on so many grop impostors. The following quotation from his book will show whether it is likely that he has been met with a more unbecoming spirit than he has manifested towards the medical faculty. He says the regular physician, "depends upon his theory of poisons, with his shield of technicalities behind which to screen himself when honesty wishes to examine his hydra-head and other deformities while the plain unassuming Thompsonian takes his remedies in one hand and confidence in the other, and truth for his shield grapples with the Hydra and with three herculean clubs we see the heads of the monsters dropping daily.

In the foregoing allusion to physicians instead of "the monster" if he had used the terms our patients I think it would have been much more appropriate as the following case will show.

I was called on sunday ~~December~~ 22. 1844 to visit a child of— in mendon agee one year and six months. On my arrival I received the following intelligence. On the Friday previous the child appeared slightly indisposed, but no serious manifestation of any disease. Saturday it appeared to have a cold but was still about. At night its respirations were rather more frequent. Sleep somewhat disturbed. Sabbath morning there had being much change in the symptoms. a Thompsonian doctor was called. He visited the child about 9 A.M. Ordered some composition tea and a teaspoonful of Tinctura Lobelia every ten minuts (to be taken then) This was continued until two ounces had been administered without vomiting. at about four P.M the symptoms became alarming and I was called in. I found the skin hot and

dry. Tongue slightly coated and deglution difficult. No evacuation from the bowels during the last 24 hours nor discharge of urine after it commenced taking the lobelia. No other effort had been made for the child except to give a little Salt water and water with the view of aiding the operation of the lobelia. I ordered two teaspoonfuls of castor oil at the moment and injection as soon as they could be prepared. Also the body to be sponged and stimulating cataplasms to the extremities and demulsents to be given with Spt. Nit. Dul. Evacuations from the bowels were soon procured and the thirst and heat of the skin abated but slight convulsions continued and the child died at about 8 o'clock in the evening about ten hours after the first dose of lobelia was administered. This is only one of a great number of most painful mementoes of the awful consequences of quackery. To show the character of the revised edition of "Thompsons practice" I will quote one or two passages. John Thompson says of his father* "after having performed his daily task, he has

* Samuel Thompson

been sent for the cows and so great was his fatigue of body from labour that on sitting down to rest he would unconsciously fall asleep, and that his father by calling to him has awoke him at the distance of half a mile". His theory of respiration is, that the infant first opens its mouth to cry, the air rushes in and inflates the lungs and the atmospheric pressure on the chest forces it out again. He believes also that the stock of flesh and blood laid up in youth are for support in after years. "The fuel of life" Thus I have given a fair specimen of the candor and consideration of the entire work. It is replete with errors and withall just what we should reasonably expect from any one who had always been shut out from the light of science, and confined to agricultural life. The Homopathic system although not quite so daring in its course yet in its results is nearly as important and vain. If by the power of the will man can stay the ravages of disease why

use the mite they give? All that is useful in their system is taken from the rich treasury of the regular physician. Diet and careful nursing which are the great secrets of their cures, are as well directed by all good physicians of the old schools as by them. But frequently not half as well observed because the patient reposes more confidence in the other means employed. These are like the ice bergs of the ocean rolling towards the torrid zone until its last crystal is mingled with the silent deep. Sure as the summers sun dissolves the ice of winter so sure must these fade before the light of reason. Most of the thousand nostrums that have so long disgraced the world emanate from these sources, and they too often wave off the skill of the physician until the eye is cast and the case is hopeless. In conclusion permit me to say Empiricism and ignorance are coworkers together to subvert the best interest of mankind. While the science of medicine comes to us clothed with the wisdom learning and experience

of more than two thousand years. Founded & nurtured by the wisest and best of men until it has become vast in its importance to all the inhabitants of the earth. Vast in its resources, Vast in its ability and boundless in its efforts to do good. It accosts itself to the concern and consideration of the inquirer with a full expectation of a just approval. It presents to the objects of its care the only reasonable hope of benefit. And although the acquirements of its votaries may have cost them toilsome days and sleepless nights; altho' years of untiring labour and great riches may have been the price of their skill. Yet they demand no pay for patients, neither consent or appropriate to their ~~exclusive~~ use the benefits of their industry. The knowledge of the profession is the common stock of all its members. And now if this great and united body of men whose minds are trained for action and whose resources know no bounds can devise means that shall soon remove quarantry. the children of this generation will be more happy and all succeeding ages will give them praise.

III.

Dissertation on Puerperal Fever.

By

Edward McEwen Beardsley,
of Monroe, Connecticut,
Candidate for the Degree of Doctor in Medicine.

Puerperal Fever

This term was first employed by Dr Mather in 1716 to designate a fatal inflammatory affection that existed among childbed women, and many modifications, and according to Dr Murwell other and totally different affections have been treated of under this head. Causing no little confusion, and almost every writer on this subject in their turn, have given a new name more particularly relative as they thought, to the true nature of this disease, to support some particular view, or theory they wished maintain, or to suit the precise form, they witnessed, without directing their minds to the possibility, that the malady was developed in its exhibitions of attack, Symptoms or pathological characters.

There is a convenience especially for recording and communicating practical knowledge, in assigning a certain individuality to diseases, designated by brief and comprehensive terms and so far nosology has its use. A name is not altogether unimportant for it not founded on the essential derangement but derived from a contingent Symptom, it conveys a false notion which to the young and inexperienced at least, is not harmless; tending to conduct their views at that period of life when the spirit of inquiry is most active, and very likely to give a bias to their nature, inquiry. The active business of life does not always afford time or opportunity for

investigating or correcting fundamental misconceptions: and thus a prejudice engendered by a mere name at the commencement of professional life may endure to its close. But there may be evils also attendant on such an arrangement which should be kept steadily in view, else they are likely to mislead and to divert attention from the only source of real knowledge — the examination of those morbid actions and structural lesions, which constitute diseases and by the minute scrutiny of which alone can we ever acquire just notions of their nature or treatment.

The term puerperal-fever is certainly vague and indefinite, but although not strictly scientific or consonant to the nomenclature of other febrile diseases, cannot, in the opinion of Prof. Chandler be well replaced by any other that has been proposed. And the old term as not involving any particular theory, and being now perfectly well understood to apply to a certain range of very fatal morbid conditions which occasionally succeed parturition, and will probably continue to be employed. — Among the number who have advanced random names to this disease, we find Dr Gooch holding a very conspicuous rank — he prefers the term "puerperal peritonitis or peritoneal fever" because it marks or puts the fact that an affection of the peritoneum is an essential accompaniment of the disease, without defining what that affection is, because it is not

Puerperal, I have said there are already objections raised by those who are more capable of judging with Dr Green than myself. And we may refer to the report of cases which occurred at Park Hospital published by Alexander J. Vache, where cases both acute, and subacute are laid down, and no traces of any affection of the peritoneum could be detected. And many other cases of anterior date might be summoned to testify against this rule which Dr Green annexes to his term.

Dr Armstrong has much to say of the inter puerperal fever and child-bed fever. calls it a vague term and says if he were to write again upon the subject he would discard it altogether; because it implies something peculiar and there is no such thing as a fever sui generis occurring in the puerperal state. Dr Robert Lee advises to banish entirely from medical use the term puerperal and child-bed fever and to substitute in there place the Uterine inflammation, or inflammation of the Uterus and its appendages. and that the terms puerperal fever and puerperal, since, may not have, applied to some Uterine physicians are not so objectionable; for the reason stated in, that in many valid cases there is no proof of any affection of the peritoneum.

In consideration of the important and sudden changes which take place in the constitution of the blood in parturition,

second page beyond

The first or inflammatory species of puerperal fever differs little from ordinary peritonitis in its symptoms. and happily the treatment for both is about the same. requiring prompt early administered and active remedies. Occurring usually in patients of a good constitution and when epidemics prevail simultaneous with diseases of a decided asthenic character.

In distinguishing it from intestinal irritation great reliance must be placed upon the previous marks of derangement of the chylopoietic viscera. and especially the absence of that extreme pathognomic tenderness upon pressure. At any period after delivery when the bowels have been neglected or mismanaged intestinal irritation may come on. there is a want of fever and its progress is more gradual than the acute and less marked than the subacute form of puerperal fever. It is distinguished from after pains by its want of complain. by the tenderness on pressure and by the severity of fever. In hysteric tenderness it is often difficult to discriminate: the patient appearing to suffer exquisite torture and screaming even before the hand reaches the surface of the body - In these cases if you can succeede in diverting the attention of the patient. keeping the hand upon the abdomen and gradually increase the pressure. some conclusion may be arrived at. whether the affection is hysterical or real.

The acute puerperal fever is the simplest: and if promptly treated a less dangerous form than the malignant typhoid species.. All agree I believe in laying down first in the enumeration of symptoms that occur a severe rigor seizing the patient about the second or third day after delivery. immediately succeeding or accompa

we cannot be surprised that this organ is frequently the seat of inflammation in the puerperal state, involving its appendages and not unfrequently the peritoneum at large in the same morbid condition, and the plain truths of the symptoms and post mortem appearances laid down by those who have no claims, theory to support and interfere with an accurate account of the disease. I mean to say, that the Uterus is the primary seat of this malady. It is a singular fact that the majority of writers upon puerperal fever have either forgotten or avoided the Uterus altogether in their communications and statements. not the most remote allusion is made, by many writers, to the state of the Uterus, congestive inversion, the peritoneal covering and if morbid appearances have existed — often describing ~~them~~ with the utmost care the constitutional symptoms which accompany the morbific state of that organ. Dr Dewees in regard to the investigations of Dr Gooch says "he appears to have been satisfied with simply inspecting the peritoneal covering of the Uterus. now we are strongly inclined to believe from what we ourselves observed, that if he had carefully examined the spermatic and hypogastric veins, the absorbents, the Uterus and its appendages with the subperitoneal tissue, he would frequently have found inflammation or some of its products." In the whole course of Dr Gooch's chapters on this malady, not the least allusion is made to the condition of any of the deeper seated Uterine organs in reference to this affection.

If other organs or tissues than the Uterus and its appendages are involved however deeply, it by no means necessarily implies that the affection is exclusive. Neither does the absence of any recognized vascularity of the peritoneal sac, the deposition or non-deposition of tonnous lymph, present any evidence of the non-participation of the Uterus.

Puerperal Fever has been divided into varieties almost as numerous as its Proteiform symptoms, with other. but there is good reason to conclude that all the varieties may be duly reduced to two, or to the at most three forms.- Inflammatory, hybrid or adynamic and perhaps another division which some writers have termed Synochoid. I am in communion from having a single mormous and the injurious in erysipelatous character. This idea I am aware has been objection. but we take into account the state of the Uterus after the completion of labour we must be ready to admit that the activity of that organ to inflammatory action of some kind. and that kind may be owing to the existing malaria or rather to the specific state of the system at that time.

It is to be wished that the profession is indebted for much light thrown upon the true character of this ~~fatal~~ fearful malady. His skillful hand traced out phenomena upon unnoticed by the most thorough pathologist. To him we owe the elucidation of the true cause of puerperal fever before a very, to those who sought in vain for the real character of this disease. His investigations are minute and almost perfect. he has explained with

undoubtedly clearly the great point upon which there was so much quibbling viz. that the first cause is inflammation of the abraded surface of the uterus. The injured condition of that organ the bloody fold and hypothermia of that organ as predisposing causes of inflammation, and lastly inflammation creating constitutional fever. The progress of the malady is more or less rapid according to the injury which the constitution has sustained from climate fevers &c and perhaps inflammation of the other organs like that of the lungs and other affections of a similar character which assume an epidemic form. takes place more frequently at one season than another. Sometimes the inflammation seems to be directed to the more superficial and anon to the deeper seated organs or tissues and still no essential difference exists in the character of the inflammation. It is very difficult to account for this caprice as it were of the disease in respect to the direction which it takes to one or other organs. but as it seems probable that inflammation of the uterus and its appendages must be considered as essentially the cause of all the distinctive puerperal affections which succeed parturition. and that the various forms they assume whether inflammatory or typhoid, will, together with the prevailing epidemic, be found to depend in a great measure on whether the serous, muscular or venous tissue of the organ has become affected. This is Dr Reid's opinion. an opinion formed from long acquaintance with every phase in the disease. he observes "that with regard to the nature of this inflammation, it is diffi

will determine whether it be of a [illegible] or a specific kind. In which it resembles other inflammatory epidemics, which are supposed to arise from a vitiated state of the air in some measure and as these diseases disappear without any appreciable cause so it is with puerperal fever.

Here the advantage of a correct theory concerning inflammation would be experienced, but our ignorance as to the cause involves a problem not yet resolved. Metritis, Peritonitis, or Uterine Phlebitis may be as often connected with one form of the fever as the other, but undoubtedly the rapidity with which sanguineous deterioration and consequent adynamia takes place will greatly depend on the nature, extent and importance of the structures primarily involved; hence it would appear that it may best be treated at its commencement at least, as simple synochal fever with the understanding that if it be not arrested in the first stages the condition of the body is such, that some organic change must inevitably follow, which we not can control. Even if we are obliged to conclude, such we are not, that it inevitably has its seat in specific contagion, yet the malady must be encountered according to the mode of its manifestation, and not simply according to the notion we may entertain concerning its exciting cause, although of course that notion will somewhat influence our procedure, but merely as far as to remove as consequence first requires, the removal of the cause.

The disease however is the same by whatever cause produced and the withdrawal is not sufficient to effect a cure. for the continued action of the original impulse is not by any means necessary to effect the establishment and development of disease. Since the system having acquired a morbid momentum is disposed to proceed morbidly according to its own laws and not according to any specific influence derived from the determining impulse. The remedies must act on the medium through which the morbid influence itself acts. that is the nervous system considered as a whole. Dr. Cocock attributes any change that may take place in the blood to nervous influence. and says. the nervous ~~influence~~ system is the main instrument by which this change in the blood takes place is partly proved by the fact that electricity in a powerful form and many of the animal and vegetable poisons acting on that system producing the same phenomena viz. blood divested of its coagulating or vital energy. and adds that the vitiated state of the blood is a secondary and not a primary link in the chain of phenomena, and that it occurs in many instances in diseases of a similar character to puerperal fever when it could not arise from venous absorption.

Much will depend upon a correct knowledge of the causes of this disease. of this something has already been said. but the more immediate causes are principally mental depression

exposure to cold, retention of coagula, and retention of portions of placenta, mechanical injuries during parturition from manual or instrumental aid, crowded and ill ventilated apartments, noxious exhalations, fatiguing attempts to suckle - and irregularity in mens &c. But frequently it arises in the most malignant form where we can assign no cause of this kind and are compelled to refer to some peculiar noxious constitution of the atmosphere or to some communication of contagious miasmata.

The causes of puerperal fever are often involved in much doubt, and may occur independant of the causes assigned to its propagation. For to how many diseases are mankind subject that no very evident reason can be given for their manifestation and the only guide in the treatment are the symptoms. It is a point of great practical importance to determine how far contagion is to be considered as a cause of this disease, that it is occasionally so, we have the indubitable testimony of many practitioners. but doubtless it more generally occurs without bearing this character.

Diagnosis - there is great danger of confounding this disease with other and less important - or of mistaking the premonitory symptoms - for the usual after pains of parturition. I mean for the young practitioner who may never have witnessed a case of this very insidious disease - The more frequent affections taken for puerperal fever are peritonitis - intestinal irritation - after pains. hysterical tenderness of the abdomen. &c -

uring is an acute pain in the abdomen in the hypogastric region and soon extends over the whole abdomen and after to the pit of the stomach. The patient lies only upon her back, and the extremities drawn up to relax the whole abdomen and to avoid the weight of the bed clothes. And in order to avoid the pressure upon the diaphragm endeavours to respire by means of the intercostal muscles, giving a very laborious appearance to the breathing. The local symptoms are always accompanied by constitutional disturbance. The secretions, more especially the milk and lochial discharges are suppressed. Skin becomes hot, the pulse rapid small and wiry - or sometimes full and bounding. The tongue varies in appearance, sometimes creamy and moist - often dry in the centre with a dirty coat, and at other times severely affected. Occasionally great pain in the head with throbbing of the temples, want of sleep, - and restlessness with occasional vomiting. The countenance has always a peculiar anxious expression so much so that physicians accustomed to the disease, say they only wish to glance at the countenance to distinguish this disease from all others. The respiration is hurried, whilst the slightest disturbance or bodily exertion increases the abdominal pain.

These are some of the symptoms of the first stages of the disease enumerated by Dr Locock & Dr Mansell, not meaning by any means to say that this fever never occurs without manifesting all or any number of the symptoms above enumerated, but that these are the general succession of symptoms that take place in the commencement and progress of this disease. Dr Lee mentions that he witnessed a fatal case of the disease, where the lochia was-

not suppressed nor the milk checked untill within a short time previous to her death

This may be owing to the direction which the disease takes. Commencing in the bowels it may only seize the adjacent organs or tissues, or confine itself to one particular organ either near at hand or according to some writers extend to the thorax, leaving scarcely any traces of its effects in the cavity where it first originated

In the first stages not described if proper remedies are employed and the disease yield to them, the pain and swelling gradually abate. the tenderness not so sore, the skin resumes its natural state and a gradual abatement of all the symptoms follow. and the patient changes her position from the back to the side and with these promising signs, recovery takes place in two or three days. This however is not always the course pursued by the malady. in other cases in these the disease is fatal the pain and tension of the abdomen does not diminish in this stage, ~~but~~ after a short time the pain gradually subsides leaving the tension and tympanitic state of the bowels perhaps increased or not at all diminished. the pulse becomes more ~~hard~~ rapid as well as feeble and thready. the skin clammy and cold The mind occasionally aberating or ideas confused soon succeeded by low muttering delirium. tongue dry and brown the teeth covered with sordes. the patient is disturbed by eructation or vomiting. sometimes of a dark or green matter. hiccough, twitching of the limbs. sunk and cadaverous countenance and cold extremities. are the sure indications of approaching death. This is the common course of this form of the disease. all the symptoms enumerated not always occurring in the same case any one may be absent.

perhaps the symptoms enumerated ~~not always~~ do not invariably pursue this exact routine but from what is termed the latent character. There may be an confusion of intellect the dilatation of the pupil varies or may be entirely absent. But whatever variety may exist in the other symptoms. I should infer that two are always present that are uniform in their occurrence and essential to this form of inflammation viz is extreme hardness and incompressibility of the pulse and the other abdominal pain and tenderness. and these perhaps may be almost implicitly relied upon in the diagnosis of this disease. although it might be observed again that it might require considerable tact to ascertain whether the abdominal tenderness be real or only apparent—

Morbid appearances occurring in the thoracic cavity according to some eminent investigators. are effusion into the cellular tissue of the lungs and into the bronchial tubes. together with a serous effusion into the cavity of the pleura. Sometimes traces of more actively acute inflammation are visible. the pleura costalis or pulmonalis being found coated with a thick layer of coagulable lymph. In the abdominal cavity the intestines are often found distended with flatus and matted together by patches of coagulable lymph. These appearances being more or less diffused over the fundus of the uterus and where they lie in apposition to it. The ovaries and fallopian tubes are often found coated with a creamy fluid and purulent deposits in the muscular structure of the uterus. and according to Dr Lee the ovaries are often completely disorganised and converted into sacks of purulent matter.

The treatment must be prompt and early. but unfortunately a medical man is rarely summoned untill the rigor has ceased and the fever established. Every hour of delay after the onset of the symptoms is of the utmost importance. If possible, the patient is seen during the rigor. hot diluents and perhaps an emetic should be given. hot fomentations should be applied over the abdomen. bottles containing hot water should be placed up to the chin. Castor oil or a laxative warm water injections may be thrown up the rectum and vagina. much is said of this plan of treatment by hospital practitioners as being very efficacious in arresting the disease. if this plan is insufficient. the symptoms not relaxing in their severity. if the patient has not been allowed to notice the subsidence of the rigor, depletion is indicated if the patient is plethoric. no exhaustion will ensue. general depletion may be resorted to. but on the other hand if the patient is delicate and feeble or exhausted from past flooding the leeches to the abdomen may be sufficient to eliminate the septic poison. but more obstinate symptoms must be met with a more vigorous plan of treatment.

The second or typhoid form of puerperal fever differs remarkably from that just described. being of a low grade of fever and of much more obscure and fatal description. This form of the disease differs from the former not only in its causes but in its symptoms. By far the most powerful predisposing causes are overgrowing health. impaired and broken down constitutions previous to delivery.

Some authors say a large portion of persons labouring under this affection are in an habitual debilitated state and to the sedentary mode of life of patients labouring under typhus even at the same time their assistant and individuals who have suffered much from hemorrhage and other debilitating causes have had ~~exhaustion~~ excited in me a suspicion mentally predisposed to this affection. Thus some of the females who have been the subjects of the disease are known to have been the victims of seduction and consequently under the depressing influence of mental suffering and despondency attendant on their wretched situation

I mention these as natural reasons when the disease occurs in a sporadic form, when prevailing epidemically and depending on some peculiar influence for its propagation it attacks indiscriminately those who are not debilitated by any previous causes as well as those who are.

The symptoms of this form of the disease are much less marked than those of the acute inflammatory species. Pain occasionally some uneasiness is not a constant attendant or found to exist only at the commencement. or should the disease be of long duration hurried its end in the most fatal cases. The patient complaining more of debility, either local or general, and occasionally it is only by means of a very careful examination and by making proper use of the

[illegible] considerable fever, that any alarming symptoms can be detected. In such cases the most formidable symptoms are to be found in the pulse, ~~the pulse~~ the countenance and the nervous system. In all these cases the pulse are extremely small rapid and compressible, varying from 135 to 150. the countenance is remarkably anxious and sunk with a tired and fleeting expression of the skin, much more collapsed and bilious than in the acute; nor does the alteration of position appear to increase the pain as much as in the acute form, the nervous [illegible] prostrated, [illegible] complaints [illegible] and want of [illegible] are often very in the most urgent manner [illegible] some disorder. The expression of suffering on the countenance is characteristic but differs from that observed in the first species of inflammation being indicated by exhaustion and anxiety rather than intense suffering. The state of the bowels is not regular. Constipation does not exist to the same extent, nor require the same powerful remedies for its removal as in the first species, yet at the same time the bowels are more or less loaded, and the hepatic and intestinal secretions are considerably deranged. The tongue is sometimes white and at others natural, occasionally it is of a bluish whitish as of cream spread over dark groundwork, a condition of the tongue almost peculiar to the disease. The temperature of the body may not vary much from the natural standard, except it be during the rigor or immediately succeeding. The skin sometimes but not always is covered with large livid spots. [illegible]

is in abeyance. [illegible] the disease, in such cases the secretions are kind of fervid. The intestinal discharges are fetid if not suppressed. The crisis speedily become placid from the subsidence of the secretion of milk; there is great eagerness for cold drinks and a dislike to be disturbed. Blood taken from the arm in small quantities produces faintness and after a very short space blood in the strength of the patient is rapidly prostrated, and the urgency of the symptoms increased. In blood taken from the arm is usually dark. The coagulum formed is loose and easily broken down and the serum is separated slowly and imperfectly. This form of the disease is sometimes extremely rapid in its progress. There is however but little severity in its symptoms. As in the inflammatory form this there is regurgitation of the contents of the stomach by the unassisted efforts of that viscus. The temperature of the body diminishes and the patient at last sinks exhausted.

Treatment of this form of puerperal fever seems to have been very unsatisfactory. The advocates of extensive depletion in all cases recommend their mode as the only safe plan of treatment. That it be unsuccessful is owing to the timidity of the physician in not ~~venesection~~ venesecting it to a sufficient extent. Dr Locock says an depressed pulse would indicate this treatment. but there is certainly an important difference between the depressed pulse and the really feeble. [illegible] there may be much difficulty in distinguishing the one from the other.

To form a rule of treatment it becomes necessary to consider what the character of the disease is. It consists in local inflammation of a low sub-acute character accompanied with constitutional fever of a continued remitting nature. The local and constitutional affections, if unchecked react on each other so as to render the circumstances of the case progressively worse. The means employed for subduing inflammation if applied here would not only be insufficient, but absolutely injurious. depleting measures having the tendency of course of increasing the debility and exhaustion already present. it is only by trying to remove the cause that tends to keep up this state of the system through the medium of the constitution generally by employing remedies that will impart to the seat of disease a degree of tonic and healthy action. that the local inflammation may be expected to assume a character as may admit of a favourable termination

Bleeding is laid down as decidedly injurious by all of whom it is expected to have had any degree of experience in the disease. often hastening a fatal termination. the medicines upon which most reliance can be placed are mercury and opium. According to the observations of some practitioners opium appears to exercise a very beneficial influence in several low forms of inflammation and there is much encouragement in the free use of it in this disease. In cases of constipation. spirits of turpentine has been recommended by some

cathartic as well as an aperient and at the same time stimulating and restoring a healthy tone to the mucous membranes. Great caution about giving any drastic purgative should be used lest it might increase the debility and accelerate the approach of diarrhoea which is occasionally a very troublesome symptom. Holding in view the objects already mentioned that of restoring tone and health action to the system that which may be called the dietic management of the patient must be borne in mind. Cinnamon or some other agreeable aromatic may be given in a cup full of wine or arrow root occasionally, chicken broth properly prepaired is recommended as an useful article.

The pathology of this form of inflammation is quite characteristic being of a nature totally different from that of the foregoing species. In this there is no copious effusion of lymph met with so abundant in the acute form. Resulting in a large quantity of purulent pus in the intestines abdominal cavity. the character of the effused fluid if any is formed of a dirty brown colour and often bloody and is peculiarly glutinous. the sheets of lymph (where there are any) are very loose and destitute of firmness. The uterus is soft and flabby often approaching to gangrene. The ovaries present the same appearance. dark coloured patches are often observable in different parts of the ~~soft~~ intestines. The thorax also is the seat of effusion in this as well as in the preceding form of inflammation. but that coating of lymph on the

thus or the same kind of fluid is not found, but presents the same appearance as in the abdominal cavity.

The third or mixed form is believed to be the most frequent, except seasons when either of the other may prevail as an epidemic. is probably the same form as described by Dr Cocock under the head of mucous intestinal irritation. The third or synochoid form resembles the first in being characterised by a violent abdominal pain upon pressure and temperature of the body being increased but not to the same extent by the absence of entire debility and exhaustion that is always a concomitant of the typhoid species. it differs from each in the characteristic of the pulse it does not possess the hardness and incompressibility peculiar to the first nor sinks into the softness and compressibility of the second form. As it holds a channel in mediate between the typhoid and acute so the treatment must be adapted to meet it not decidedly antiphlogistic or entirely stimulating or resembling more to the one than the other as the disease is found to vary more or less in the nature of either. and perhaps the treatment employed in rheumatic fever with propriety be recommended generally in this form of the disease. but of course modified to suit the symptoms that arise in every stage. [illegible] disease is not [illegible] characteristic. [illegible] resembling the acute form and [illegible] of distinction

From this and either of the other forms Dr Gooch describes a form of puerperal fever which is very nearly allied to this form, in which the pathological characters exhibited no effects of inflammation the uterus and its appendages and the peritoneal covering presented a pale appearance and says they taught him that a lying in woman might have permanent pain and tenderness of the abdominal region without any pain independent of inflammation of the peritoneum or any other part. that the attack seemed to commence sometimes in violent colic pains and early raging into permanent pain and tenderness resembling inflammation as in the ruptured operation of a ruptured. These cases when seen to them in their first stages were treated as by opiates and fomentations.

There seems to be nothing particularly dangerous in this form of the disease except an incorrect diagnosis be formed and improper remedies administered The disease to which it bears a striking analogy is peritoneal inflammation and Dr Gooch says most invariably taken for that disease by the practitioners who witnessed it all of whom possessed at least that average degree of sense and knowledge on which the public must necessarily depend. and he thinks this is the form that occurs sporadically modified perhaps by the peculiar state of the patient

IV.

Dissertation on Medical Chemistry.

By
Joseph Edgar Clark,
of Rootstown, Ohio,
Candidate for the Degree of Doctor in Medicine.

Medical Chemistry –

According to the statutes of the state, it becomes necessary for candidates for degrees to present a dissertation, upon some subject, connected with the medical sciences; and I am well aware that something of this kind, will not only be expected, but absolutely required, and that excuses will avail nothing upon this occasion – I think however, it will not be expected, that the student of Medicine who is an attendant upon a rapid course of Lectures, in an Institution like this, which requires his strict and undivided attention to all the various branches that are continually urged upon his mind, and whose leisure moments for writing a dissertation are extremely few, and whose knowledge of Medicine, is merely theoretical – Under these circumstances therefore, I trust it will not be expected, that any thing new or original will be

written, or that I shall render myself in the slightest degree interesting, to the Honorable Members of the Medical Board, before which it is to be delivered; more Especially, as the subject which I have selected, is one with which every Medical man, is already perfectly familiar — In pursuing subject, I shall not confine myself strictly to what may be called Medical Chemistry, but deviate so far as to make a few general remarks relative to Chemistry, as a Science, its rise and progress, and its application not only in Pharmacy, and Physiology, but also in the arts, briefly glancing at various Chemical topics as they may occur to my mind, and as I can collect them from the writings of various authors, making in short my Thesis somewhat of a miscellaneous Character —

Without further ceremony, I propose to proceed to my subject, feeling an assurance that all errors and mistakes will be overlooked

Of all the various branches of the Physical Sciences, there is perhaps none more highly interesting to the Scientific man, and of more extensive application in the arts, or of more practical importance to the medical Profession in particular than Chemistry — Although to one unacquainted with the mysterious Laws by which it is governed, and the astonishing effects resulting from Chemical experiments &c, it would seem to be the least attractive, and most uninteresting, of all the subjects connected with the Sciences; in as much as it occupies itself, in the investigation of the Composition, properties & elementary Constitution of all Substances, and of the more obscure and apparently incomprehensible Phenomena, which are continually occurring in natural bodies many of which are unperceived by our senses, or unaccompanied by sensible motion

But on the contrary; The present advanced state of perfection, to which the Chemical Science has already attained; the present amount

of Chemical knowledge, and facilities for obtaining it, the dexterity with which the Chemical Philosopher of the present day, in his Laboratory, manages to display or demonstrate Chemical facts, (of great importance to mankind), the brilliant and highly satisfactory results of his experiments, together with various other attractions all united can not fail to render it decidedly the most interesting, and instructive branch of Natural Science —

Although it has been said that Chemistry as a science, could not be refered to a period, far beyond the commencement of the last century; yet we cannot for a moment doubt that the ancient Philosophers, attached great importance, to what was termed Chemistry or Alchemy, in as much, as it was the object of their researches, to discover what was by them called, the Philosophers Stone, and with which they immagined

they should be enabled to convert the base metals into Gold, & Silver, or to discover the Grand Catholicon, or universal remedy; which was to remove every disease, to avert death, and confer terrestrial immortality upon man; also the universal Solvent which it was supposed nothing could resist, and these miraculous virtues resided in one and the same substance — Any farther than Alchemy was concerned in the preparation or discovery of the Grand Catholicon or universal medicine which was fancied to be so admirably adapted for the removal of all diseases, and which was to prolong life to an indefinite length of time —

Any farther than this, it is generally believed, that Chemistry was not very extensively connected with Physic, until comparatively a late period —

How far Alchemy had extended among the ancients or whether it had

even assumed the form of a Sect, cannot be ascertained. Traces of it appear among the Greeks and Arabians. The Alchemists seem to have been established in the west of Europe, as early at least as the ninth century. Between the Eleventh and fifteenth Centuries, it was in its most flourishing condition.

Geber an Arabian Prince of the Seventh Century, is said to have been the Earliest Alchemist whose name has reached posterity. Also Rhases, & Avicenna, who were celebrated Physicians of the age, likewise Arabians, are said to be the first, who introduced Pharmaceutical preparations into their works; the latter of which, (Avicenna) describes particularly the method of Conducting distillation. He also mentions for the first time the three mineral acids, and speaks likewise of sublimed arsenic, and Corrosive Sublimate.

In the year 1220, Roger Bacon said the foundation of Chemical Science in Europe. His discoveries were so extraordinary

that he was excommunicated by the Pope, & imprisoned for ten years, on supposed dealings with the Devil — He was it appears a believer in a universal Elixir or he proposed one to Pope Clement the Sixth —

Basil Valentine, a German, who is said to have been born in 1394, led the way to the internal administration of metallic medicine by a variety of experiments on the nature of Antimony —

It is believed that preparations of Iron were administered internally, as the Sulphate of Iron, it being mentioned as a tonic Styptic and astringent — He also mentions the volatile Alkali, and its preparation from Sal-Ammoniac — and notices the production of Ether from Alcohol —

Paracelsus; who was born in the year 1493 — is said to have used mercury internally, although its effects externally & externally were well known in the twelfth century —

Paracelsus, thus armed with opium mercury and Antmony, remedies of no trifling importance, travelled in all directions, and performing many extraordinary cures, which brought him into notice, and being well acquainted with Chemistry & Physic, was elected professor of Chemistry in 1527 which was the first Professorship, that was established, in Europe, for the promotion and dissemination of Chemical Science.

While seated in his chair, he burnt with great solemnity, the writings of Galen, & Avicenna, and declared to his audience, that if God would not impart the secrets of Physic, it was not only allowable, but even justifiable, to consult the Devil.

His Cotemporary Physicians he treated with the utmost contempt, and tells them that the very down of his bald pate had more knowledge, than all their writers, the buckles of his shoes had more learning than Galen & Avicenna, and his beard more

experience than all their universities —

With such a temper and disposition however, it could not be expected, that he should long retain his Chair — He quitted it in consequence of a quarrel with the Magistrates — and although he boasted of possessing a Panacea, which was capable of curing all diseases in an instant, and even of prolonging life to an indefinite length — Yet this drunkard, the prince of Empirics, died after a few hours illness, with a bottle of his immortal Cathalicon in his pocket —

About a century of Paracelsus, Van Helmont, a man of Eminence took the lead in Physic, he may be considered as the last of the Alchemists, his death completed the disgrace of the universal medicine. He was the first Physician who applied alum in uterine haemorrhage & acquired great reputation from the success of the practice —

The foundation of the Alchemistical system, being thus shaken the facts ~~being~~ which had been collected soon became a heap of rubbish, and Chemistry was left without any fixed principles, and destitute of an object —

About this period, or in the year 1669. Becher, & Stahl, published at Frankfort a work entitled, Physic Subterranea — The publication of this book, forms a very important era, in the history of chemistry — It then escaped for ever from the trammels of Alchemy, and became the rudiments of the of science which we find it at present. It has been distinguished by the name of the Stahlian, Theory —

Ever since the days of Stahl Chemistry has been cultivated with ardor in Germany, and the North, and the illustrious Philosophers, of these countries have contributed highly towards its progress, and rapid improvement —

The most deservedly celebrated of these are Margraf, Bergman Scheele Klaproth &c – In France soon after the establishment of the Academy of Sciences in 1666 – Homberg, Geoffroy, and Lemery, acquired great celebrity by their chemical experiments and discoveries; and after the new modelling of the Academy, Chemistry became the peculiar object of a part of that illustrious body – Rouelle, who was made professor of chemistry in Paris about the year 1745 – Contrived to infuse his own enthusiasm into the whole body of the French literary men, and from that moment Chemistry became the fashionable study – men of Eminence appeared every where; discoveries multiplied, the spirit pervaded the whole nation, extended itself over Italy and appeared even in Spain –

After the death of Boyle, and of some other of the earlier members of the Royal Society little attention was paid

to chemistry in Britain, except by a few individuals — The spirit which Newton had infused for the mathematical sciences, was so great, that for many years, they grew within the vortex, almost every man of eminence in Britain — But when Dr Cullen, became Professor of Chemistry in Edinburgh in 1756 — he kindled a flame of enthusiasm among the students, which was soon spread far and wide by the subsequent discoveries of Black, Cavendish, and Priestly, and meeting with the kindred fires which were already burning in France, Germany, Sweden, and Italy, the science of Chemistry burst forth at once, with unexampled lustre — Hence the rapid progress which it has made during the last fifty, the universal attention which it has excited, and the unexpected light, which it has thrown upon several of the most important arts and manufactures —

During all this time Chemistry has sustained more or less intimate relation to the theory of medicine, the Pharmacopœias and Dispensatories having kept pace with the scientific progress of the age.
In tracing the march of chemical improvement, we cannot but be struck with the new, and powerful remedies which it has introduced; and the many unimportant and feeble articles, which it has dismissed from medical practice.
Opium has been at length compelled to confess its secret sources of action, and Ipecacuan to yield its emetic element in a state of perfect purity. Chemistry has also been the means of establishing the identity of many bodies which were long considered specifically different; thus an extensive list of mineral substances have been discarded since it is known that they are their properties to one and the same common principal viz: gelatine, albumen,

carbonate of lime, &c so again the fixed alkaline salt, produced by the incineration of different vegetables, have been found to be potash from what ever plant it may have been obtained with the exception of sea plants which yield soda.

For the foregoing sketch, or history, of the rise and progress of Chemistry thus far; I am indebted principally to the historical introduction, of Paris Pharmacologia and the introductory remarks of Thomsons Chemistry, and others —

Some knowledge of Chemical arts, is said to be coeval with the earliest ages of antiquity — The application of Chemistry in the arts at the present time is very extensive, and it is more or less intimately connected with almost every branch of human industry — It is by the aid of Chemistry that, almost every kind of manufacturers are enabled successfully to go through with many of their most delicate processes, as bleaching, dye-

ing, and painting, also the manufacture of glass and the various kinds of pottery, and porcelain - It likewise furnishes mankind with a great variety of articles quite indispensable in domestic life, as sugar, vinegar, common salt, Sal Eratus, Soap, coloring materials &c - So also, in the more refined arts and acquirements as in daguerreotype drawings, plating by means of Galvanism, & the preparations of materials for painting - &c

Again it has been found, by comparatively recent investigations and experiments, that chemistry bears an intimate relation, to agriculture, and this subject is now exciting the attention of the agriculturist, and is cultivated with great interest by men of science and learning, and anyone who has examined the works of Liebig and others, on the subject of agricultural Chemistry, will not hesitate to say with me that Chemistry contributes not a little, to the improvement, & advancement, of that branch

of human industry, most of all to be cherished among enlightened and civilized people.

Chemistry as a science.

Chemistry is defined by Dr Thomson to be "that" science which treats of those events or changes in natural bodies which are not accompanied by sensible motions". "Chemical events are equally numerous" says the same Author, "and fully as important, as those, which belong to mechanical or Natural Philosophy for the science comprehends under its almost all the changes in natural objects with which we are more immediately connected, and in which we have the greatest interest. Chemistry therefore is highly worthy of our attention, not merely for its own sake, because it increases our knowledge and gives us the noblest display of the wisdom and goodness of the Author of Nature. But it adds to our resources by extending our dominions over the material world, and is therefore calculated to promote our enjoyment and ange-

ment our power. Again he remarks that Chemistry is intimately connected with a great variety of natural phenomena. A satisfactory explanation, of the causes of rain, snow, hail, dew, wind, earthquakes, & volcanoes, has been given by the aid of chemical knowledge. The phenomena of respiration, the decay and growth of plants, and some of the most important functions of the animal economy, are also explained in a satisfactory manner, only by the aid of Chemistry. The laws which govern chemical affinity, the doctrin of definite proportions, the chemical effects of electricity and galvanism the expansive power of heat evaporation the phenomena of flame and of combustion, are among some of the most prominant which arrest the attention of the chemical student. The doctrin of definite proportions, or atomic numbers, is not only highly interesting as a subject of Philosophy, but is also intimately connected with Chemistry, both as a science, and a practical

art. Nothing perhaps, even the sublimest works of nature, are not more calculated to elicit the wonder and admiration of a reflecting mind, from this fact that substances combine with each other in exact and definite quantities, or proportions and that these proportions are the same in relation to the same substance throughout the world, and have been so ever since the creation. This discovery may be considered as a new proof, directed expressly to the present age, that the most minute works of what we call nature do indeed bear the most indubitable marks of divine agency and design. But while the discovery itself, is an evidence of the Baconian Philosophy of the present age, the development of its principals by the constant accession of new ideas is calculated, rather to humble the pride of human knowledge by a constant conviction that after all our acquirements we know comparatively nothing of the laws and operations of nature.

The very fact that the laws of proportions now, comparatively just known, to man, have existed

ever since the creation of matter, and have been in perpetual exercise all over the universe without a suspicion of their existence, is of itself a sufficient proof of the almost entire ignorance of man - even of the phenomena of nature, and a still stronger proof of his ignorance of her laws" - "And if facts in themselves so simple, yet so wonderful, and when once known so obvious, have escaped the observation of men for thousands of years, is it not probable that phenomena are constantly going on here - our eyes, which could we understand them, would astonish us still more - and at the same time, afford a still stronger ~~proof~~ conviction of our ignorance, and want of penetration?"

In the next place, I come briefly to consider the relation which chemistry bears to Physiology, and more particularly that branch which relates to the nutrition and growth of the animal system, and the production of animal heat &c. I am very well aware that this is a subject upon which there is a great difference of opinion, and that there are many who are unwilling to admit that Chemistry has any thing

what ever to do with Physiology, that it is a vital process only which supplies animal heat &c.
In pursuing this subject, I shall copy largely from Liebigs writings, - although there are some objections to his theory, yet it cannot be denied that he advances many very ingenious and satisfactory arguments in support of his doctrine —
In the preface to his work on organic Chemistry in its application to Physiology & Pathology the above named Author, says that "before the time of Lavoisier Scheele & Priestly Chemistry was not more closely related to Physics than she is now to Physiology. At the present day it is so fused as it were into Physics that it would be a difficult matter to draw the line between them distinctly. The connection between Chemistry and Physiology is the same and in another half Century it will be found impossible to seperate them;" he furthermore remarks that "one of the most remarkable effects of the recent progress of science is the alliance of Chemistry with Physiology, by which a new and unexpected light

has been thrown upon the vital processes of plants and animals". "We have now no longer any difficulty in understanding the different actions of aliments, poisons and remedial agents, we have a clear conception of the causes of hunger, of the exact nature of death, and we are not as formerly obliged to content ourselves with a mere description of their symptoms" "It is now ascertained with positive certainty that all the substances which constitute the food of man must be divided into two great classes one of which serves for the nutrition and reproduction of the animal body, while the other ministers to quite different purposes" — "Thus starch, gum, sugar, beer, wine, spirits, &c furnishes no element capable of entering into the composition of the blood muscular fibre, or any part which is the seat of the vital principal — The primary conditions of the maintainance of animal life, are a constant supply of certain matters animal food, and of oxygen in the shape of atmospheric air —

During every moment of life, oxygen is absorbed from the atmosphere into the organs of respiration, & the act of breathing cannot cease while life continues. The observations of Physiologists have demonstrated that the body of an adult man, supplied abundantly with food, neither increases nor diminishes, in weight, during twenty-four hours, and yet the quantity of oxygen absorbed into the system in that period, is very considerable.

According to the experiments of Lavoisier, an adult man takes into his system in one year not less than 744 pounds weight of oxygen, but he finds his weight at the end of the year either exactly the same, or differing one way or the other by at most a few pounds. No part of the oxygen remained in the body but is given out again in combination with carbon and hydrogen. The carbon and hydrogen of certain parts of the animal body, combines with the oxygen introduced through the lungs and skin, and flies off in the form of carbonic acid and the vapor of water. We may assume with Lavoisier and Seguin that an adult man absorbs into his system

321 oz of oxygen daily, and later that the weight of the whole mass of blood, is 24 pounds, of which 80 per cent is water. Now from the known composition of the blood, we know that in order to convert its carbon amount of carbon and hydrogen into carbonic acid and water, 64,102, grs. oxygen are required, this quantity, will be taken into the system in four days and 5 hours. It follows then that there must be a sufficient quantity of carbon & hydrogen taken into the system, in the form of food, to supply the oxygen. And unless this is the case, there will be a diminution in the weight, the oxygen combining with the tissues of the body containing those elements, which will be exhaled from the lungs and skin in the form of carbonic acid and water. Hence it is evident that the amount of nourishment required by an animal for its support must be in a direct ratio with the quantity of oxygen taken into the system. The consumption of oxygen in a given time, may be expressed by the number of respirations. It is therefore obvious that in the same animal the quantity of nourishment required must vary with the force and number of respirations.

A child breathes quicker than an adult, and consequently requires food more frequently, and accumulates in temperaments, and hence changes easily. A bird, deprived of food dies on the wing, while a serpent will live three months or longer without food. Air is expanded by heat, and contracted by cold. An equal volume of hot and cold air contains therefore an equal amount of oxygen. We respire more carbon at a low, than at a high temperature, and require more or less carbon in our food in the same proportion, and consequently more is respired in the frigid, than in the torrid zone. Even if an equal weight of food is consumed, in hot and cold climates, Infinite Wisdom has ordered that very unequal proportions of carbon shall be taken in it. As the food premized by the inhabitants of southern climates, do not contain more than 12 per Cent of Carbon, while the blubber and train oil which feed the inhabitants of the polar regions contain from 60 to 80 per cent of that element.

From what has been said we may conclude that the oxygen of the atmosphere, received into the blood in the lungs, and circulating throughout every part of the animal body, acting on the elements of the food, is the source of animal heat

All living creatures whose existence depends upon the absorption of oxygen, possess within themselves, a source of heat independent of surrounding objects —

In the animal body heat is produced only in those parts, that, which vital blood, and with it the oxygen absorbed in respiration is conveyed — The combination of a combustible substance with oxygen is under all circumstances the only source of animal heat —

In whatever way carbon may combine with oxygen, the act of combination is accompanied by the disengagement of heat —

It is indifferent whether this combination takes place rapidly, or slowly, at a high, or at a low, temperature, the amount of heat is

a constant quantity — The carbon of the food being converted into carbonic acid within the body must give out exactly as much heat as if it had been directly burnt in oxygen gas, or common air, the only difference is the production of the heat, is diffused over several times — In oxygen gas the combustion of carbon is rapid and the heat is intense — in atmospheric air it burns slower and for a longer time in the animal body the combustion is still more gradual and the heat is lower in proportion — In the animal body the food is the fuel In the winter when we take exercise in a cold atmosphere, and when consequently the amount of inspired oxygen, increases; the necessity for our containing carbon & hydrogen increases in the same ratio, and by gratifying the appetite thus excited, we obtain the most efficient protection against the most piercing cold, a starving man is soon frozen to death — The animals of prey in the arctic region as every one knows far exceed in voracity those of the torrid zone, our clothing is nearly an equivalent

for a certain amount of food - If we were to go naked, like certain savage tribes, or if in hunting or fishing we were exposed to the same degree of cold as the samoyedes we should be able without use to consume 10 pounds of flesh, and perhaps a dozen tallow candles into the bargain daily, as usually travelers have related with astonishment of their people

According to the preceding exposition the quantity of food is regulated by the number of respirations, by the temperature of the air, and by the amount of heat given off to the surrounding medium - The whole process of respiration appears most clearly developed when we consider the state of a man or other animals, totally deprived of food - The first effect of starvation, is the disappearance of the fats, and this fat cannot be traced either in the urine or in the scanty fæces - Its carbon & hydrogen has been given out through the skin and lungs, in the form of oxidized products, it is obvious that they have served to support respiration - In the progress of starvation however it is not only the fat, which disappears, but also by degrees

all such of the solids, as are capable of being dissolved as muscles and other of the organized tissues, and towards the end the particles of the Brain begin to undergo the process of oxydation, and delirium mania, and death closes the scene - That is to say all the resistance to the oxidizing power of the atmospheric oxygen ceases, and the chemical process of Eremacausis or decay commences, in which every part of the body, the bones excepted, enters into combination with oxygen - The time which is required to cause death by Starvation, depends on the amount of fat in the body, on the degree of Exercise, as in Labor, or Exertion of any kind, on temperature of the air, and finally on the presence or absence of water - In all Chronic diseases death is produced in the same way - viz: the chemical action of the atmosphere, overcoming the vital action or force" -

Again Liebig says that the substance of which the Form of man is composed may be divided into two classes, into nitrogenized and nonnitrogenized, the former are capable of

Conversion into blood, the latter are incapable of this transformation — But of those substances which are adapted to the formation of blood are formed all the organic tissues — The other class of substances serve to support the process of respiration —

Among the former are secondary vegetable fibrine, albumen, & caseine — Animal flesh & blood or animal fibrin, albumen, and caseine — Among the elements of respiration in our food, are fat, starch, gum, sugar, pectine, &c — The most recent and exact researches have established as a universal fact, to which nothing yet known is opposed that the nitrogenized constituents of vegetable food have a composition identical with that of the constituents of the blood — No nitrogenized compound, the composition of which differs from that from that of fibrine albumen and caseine is capable of supporting the vital process in animals — Chemical analysis has led to the remarkable result, that fibrine and albumen either vegetable or animal — and likewise caseine that nitrogenized constituent of milk, (the only one

upon which the growth of the organized tissues of the young animal depends, contain the same organic elements united in the same proportions, that is that they are isomeric, in their chemical composition, the proportion of their ultimate elements being identical, but the difference of their external properties shews that the particles of which they are composed are arranged in a different order. Both fibrine and albumen in the process of nutrition, are capable of being converted into muscular fibre, and muscular fibre is capable of being converted into blood. If we compare the composition of organized parts with that of fibrine and albumen the following relations present themselves. All parts of the animal body which have a decided shape, which forms parts of organs, contain nitrogen. No part of any organ which possesses motion and life is destitute of nitrogen. All of them contain likewise carbon & the elements of water. Finally, water & mineral salts are those ingredients of the body which are destitute of nitrogen. Both are amorphous or unorganized, and only so far take part in the vital, chemical, as that their presence

is required for the due performance of the vital functions — Much more might be written upon this subject, but time and space will not permit, neither does the occasion require it —

We come next to the effects of medical chemistry; that branch of chemical science which rids us the preparation of many of our most efficacious, and powerful medical remedies — Hence we to draw a line of distinction between those medical substances which are formed by a purely chemical process and those which are not; we should find that a large majority of our most potent remedies would be included under the chemical division —

" Doct: A J Thomson, says that "the operations of Pharmacy which are strictly chemical may be arranged in three classes —

First, operations which produce changes separating the constituents without any obvious decomposition —

Second, operations in which changes are produced by the chemical action of one set of bodies

upon a nother, or attended with obvious decomposition

Third, Operations in which the oxidizement and the deoxidizement of bodies are effected by means of a very high Temperature —

In the first operations, the changes are effected, 1st, By Caloric, inducing Liquefaction, Fusion, Evaporation, Distillation, Sublimation, &c and 2d, By water, and other Menstrua, as Solution, Maceration, Infusion Decoction &c.

In the Second operations, the changes are by, Decomposition, Dissolution, Precipitation, Crystalization & Fermentation —

The Third, and last class of operations in which oxidizement and deoxidizement are effected by means of a high temperature as fusion, Distillation, Sublimation, the oxidizement of metals, the Deoxidizement or reduction of metals

Thus we find the above classification embracing an almost endless variety of medical bodies, as for example the Alkalies, Potassa, Soda, and Ammonia — All the Metalic Oxides, as of Silver Mercury Copper, Iron Lead Zinc

Antimony & Arsenic — So also all the acids as Sulphuric, Carbonic, Boracic, Acetic, Benzoic, and so on — And a long list of precipitates, as the metallic salts, and numerous others widely differing in these sensable properties —

It was my intention to have dwelt longer upon this part of my subject, but want of time, and other circumstances will not permit — and furthermore I am well aware that quite enough has already been written unless better justice can be done the subject,

Joseph E. Clark

V.

The Valedictory Address.

By

Robert Watson Forbes, B.A.

of New Haven, Connecticut,

Candidate for the Degree of Doctor in Medicine.

The Comprehensive nature of Medicine, as a Science, & the means, necessary for its successful practice.

Gentlemen of the Graduating Class.

The occasion which calls us here to-day, has for us, an unusual interest.

Manhood, with its cares now commences, & we have at length gained that, for which we have spent long years in preparation; which has been the object of a wearisome, & varied course of education; & in whose practice, & continued study, we are to devote the remainder of our lives.

The profession to whose membership we are now legally admitted, is high & noble in its objects, & while we stand upon its threshold, let us pause a moment, & consider its Comprehensive nature, & the means

necessary for its successful practice.

The domain of Medical Science is vast, embracing in its wide extent, almost every branch of human learning.

To the more obvious relations of Anatomy; Physiology; & Pathology, some acquaintance with Chemistry; Comparative Anatomy; Botany; & Natural Philosophy, is now demanded of the Physician, not only by the advanced state of medicine itself, but also, by the general public expectation.

Though these different Sciences may primarily have been seperate, & distinct; in the progress of our art, [like the threads of the weaver, in the firm product of his loom] have become so twined, & interwoven, that could they be disintangled Medicine as a science, would cease to exist.

Within the last 30 years, the progress of medical knowledge has been rapid & the rich discoveries made during this period have given an interest to our profession, which

half a century ago, could not have been dreamt of.

The Chemist has diligently been toiling in his Laboratory, to unravel the secrets of our organism; & the startling results in human pathology, which the mind of Liebig in Germany, & of Dumas in France, have lately unfolded, bring to all, astonishment, & turn the inquiries of the Physiologist in a new direction.

Until within a short period the application of Chem. in our behalf, has been chiefly in the preparation of articles of Materia Medica.

In that department, she has effected important simplification of remedies; & where the physician of olden time, was obliged to administer his medicines in a cumbrous form, we are furnished from the Laboratory with the active principles, freed from the useless portions with which nature has enveloped them.

The chief cultivators of this science have now turned their attention to

the Chem. of the living body.

Many of the operations therein maintained, are closely analogous to Chem. processes which are already known.

And followed as they have been, by rigorous experiment & never ceasing — observation; results have been produced & theories offered; based, not upon a wild & speculative fancy, but deduced from plain undeniable facts.

It is perhaps unnecessary to remark, that this was not the method pursued by the half Physicians, half Chemists of former days, who under the name of Iatro-Chemists, so beclouded with their imaginative explanations, the knowledge of the various functions performed by this living machine, that we have even now, but just begun to dispel the mists of their creation, & recommence at the point from which they diverged.

From this point, the phenomena of Organic Chem. have been unfolded with

unexampled rapidity, discovery following discovery in quick sucession.

Numerous wonders of Organic nature, daily brought to view, & whose causes have long been perplexities to the Medical Observer, have been revealed; & sooner or later we may anticipate from the advance of this science, the complete disclosure of the laws of Physiology.

The most laborious investigations, & tedious analyses of the different solids & fluids, with the secretions & excretions of the body, have already been entered into, & are still advancing.

Need we mention as the product of these researches, the great alteration in our views, concerning the special pathology of the Kidneys & liver; & in consequence, the more exact mode, by which we are now enabled to treat functional derangements of these organs.

A flood of light has been

poured upon the darkness, heretofore shrouding the great subject of digestion, an operation, which compared with the other workings of our organism, ranks among the first in importance.

What additions have been made to our knowledge concerning the production of Animal Heat; Of the great function of Respiration; Of the causes of Decay, which are ever active within us; With its antagonist agents of Nutrition, whose business it is to repair our frame & keep it in habitable order.

These splendid results, so startling to the physiologist, so conclusive by their simplicity, & indisputable from their basis of facts; the persevering application of the improved methods of organic analysis, has enabled the Chemist to reveal.

The action of the vital principle upon the elements of the organic compounds, is the chief point of difference between these, & the inorganic substances.

Both are subservient to the same laws of Chem. Combination. The arrangement of the elementary particles of the latter, is dependent upon mere Chem. Affinity, modified by such extraneous circumstances as Heat, Light, et cetera: & when to the elementary principles, we apply these necessary circumstances, Chem. Affin. will take place, resulting in the re-formation of the inorganic compound.

But in the living body, if we are acquainted with its elementary constitution, & can determine the relative number of atoms for each tissue, still we cannot combine them to form the living organism, [although in their arrangement heat, light, &c. have a qualifying influence,] for the chief controlling power is the vis vitae, which is beyond our command.

The all-wise Creator has given to man, power to penetrate into many of the secrets of his creation, but has veiled the great mystery of life; teaching us by its daily dispensation & removal, that the tenure

of its existence is in his hands, & that by his will we reach a ripe old age, or are plucked in the flower of youth.

The scientific practitioners, both of Europe, & this country are zealously testing & have thus far confirmed by numerous trials, the truth of the great pathological doctrines, which the genius of Liebig has most lucidly expounded.

Henceforth, we are to do more than merely look for the buffy coat in the blood, or try the renal secretions, by pouring upon them alkalies & acids, or exposing them to an evaporating heat.

But a few years since, & the light shed by this department of science, feebly glimmered in the distance.

Now, a thousand minds with retort & crucible feed its glowing flame, & the powerful radiation of its beams enlightens the medical inquirer on his course.

I have been thus particular

in the mention of Chem., because it is at the present time considered, one of the most useful adjuvants to Med.; & in its rapid strides, it will without question, materially alter the nature of the treatment of disease.

Besides its important bearings on our profession, what changes & incalculable advantages have Commerce, Agriculture, & the Arts, received from its progress.

We, gentlemen, have enjoyed the instruction of one* who in this country, is justly considered the Father of Chem.; & as he has taken to pieces & disclosed to us, the composition of bodies apparently as indestructible as the world itself, we have no doubt all of us stood amazed, at the power of a science, opening to our view those elements, which the great artificer has combined to form his worlds, his creatures, & the countless ornaments of his vast creation.

* Professor Silliman, was one of the earliest cultivators as well as one of the most successful of American Chemists.

Man of the Animal Kingdom, is the highest, as he is the most complex in his organization.

Endued with reason, he controls powers both of animate & inanimate creation whose strength, met by human force alone would overwhelm & destroy.

Having dominion over all things here below, he is but the agent of a ruler mightier than he, whose authority he cannot resist & to whose will, early or late, he must bow.

Comparative Anatomy teaches us, wherein consists the difference between our organs & uses, & those belonging to brutes. From the demonstrative evidences of their construction, we obtain more just perceptions of our own.

The origin of this science is in remote antiquity.

Among the early physicians, Galen in the schools of Alexandria, sought from the

anatomy of the ape, to determine the functions of the human organs.

The impossibility of observing the living action of these in man, has led the inquirer to experiment upon animals, & from this source, has sprung much important physiological knowledge.

Seperate from its connexion with Med., it has shown the affinities existing between animals: the disappearance of organs, & the compensation which nature produces in their stead.

It moreover displays the developement of animal life, from the lowest order of the kingdom, [scarcely to be distinguished from a vegetable], up to man himself, the first of the interminable series. It was in the combined study of human & Comp. Anat., that the celebrated John Hunter, laid the basis of his great med. attainments, & the vast collection of the Royal. Coll. of Surgeons in London illustrating these subjects, is a

monument of his untiring perseverance & zealous activity in the pursuit of science.

But death by no means ended the usefulness of his labors. From the study of his large collection, arose the eminent Comp. Anatomist of our time, & among the followers of this science, the name of *Owen, stands as its brightest ornament.

The benefits of Comp. pathology, are most signally shown in the great discovery of Jenner by which small pox, one of the most contagious & disgusting of diseases, was brought within our control.

The probability of the animal origin of other complaints is increased, when we consider the communicability of Glanders, from the Horse; & that certain cutaneous diseases, are produced by insects.

* Richard Owen. F.R.S. Is the curator of the Hunterian Museum, & the necessity of examining animals, in order to make a correct catalogue of Hunter's specimens led him to the study of Comp. Anat.

When within the limited scope of our vision we examine the forms of vegetable life, [from the tiny plant at our feet, to the branching oak towering far above our heads,] we are struck with the number of forms presented in this narrow space, & exclaim in despair; if here the species are so various, how useless the attempt to discover all of those, forming the carpet of the world.

But on further investigation, we find the same natural divisions into families existing in this, as in the other organised kingdoms.

Thus the different members of these families, by a resemblance in appearance or character may be referred to their proper station.

Though an acquaintance with all the species is impossible, still, when we read an accurate description of a plant, whose growth in a distant clime prevents personal inspection, we obtain clear notions of its character, by a reference to the family to which it belongs.

But Botany includes not only classification, but also the diverse phenomena of veg. life.

It examines the structure of plants; studies into their various properties & uses; investigates their modes of nutrition, growth & reproduction.

It displays the remarkable agreement in the sensible properties of plants, between which in structure & family there is a near alliance; no matter how wide the difference in geographical position.

From veg. substances, directly or indirectly, is the food of man & all animals derived, & since many diseases to which the organs of our body are liable, [& especially those of the abdominal cavity,] often arise from improper food; it will be seen that a knowledge of the different articles of diet is imperatively demanded of the physician; & not this alone, a large proportion of our active remedies consist of veg. principles, & it is not the nature of an enlightened mind, to witness the operation

of any agent, without searching for its origin, & the cause, producing the effect.

There is too a most striking advantage to the Med. man in the study of a science, which like Botany, consists of minute distinctions, & whose tendency is, to give a high cultivation to the observing faculties.

Upon the acuteness of these faculties, diagnosis chiefly depends.

An appropriate illustration of the truth of these remarks, is familiar to us all, in the person of a venerable physician * celebrated for his attainments in Botanical science; whose quickness in distinguishing disease, & ready perception of its slightest changes, have become a proverb in the mouths of the profession.

* Dr. Eli Ives. Prof. of Theory & Practice.

We summon also the various departments of Natural Philosophy to our aid, applying Acoustics, to detect the different lesions of the lungs, & ascertain the normal or abnormal condition of the heart.

The Physiologist examining the ear, studies the propagation of sound, & in the principles of Optics, seeks to understand the causes — regulating Vision.

The Surgeon avails himself of mechanical contrivances, in fixing the necessary apparatus for the support of fractured limbs; the reduction of dislocations; the determination of form in his instruments; & in numerous cases of injury or disease, where both surgical & mechanical skill become needed.

As we thus quickly review a few of those departments of learning, whose principles & discoveries enlarge the volume of medical

knowledge, [like the brooks & rivulets, whose combined waters swell the stream into the deep-flowing river.] we cannot but remark the curious dependence of one science upon another.

The Astronomer in yonder observatory, gazing upon the starry heavens, examining myriads of distant worlds, each with its flaming sun & pale silvery moon.

The naturalist, who with the Achromatic microscope watches the movements of animals invisible to the naked sight, & finds whole rocky strata composed of their flinty shields.

Both, use an instrument, whose pattern is the human eye.

The Geologist drawing from their grave deep in the bowels of the earth, fragments of teeth & bone, is taught by Comparative Anatomy, the character & habits of the creatures to whose framework they once belonged.

So each, in laboring for themselves, toil for the good of all.

Having thus shown the comprehensive nature of medicine as a science, drawing within its circle the various divisions of knowledge; (like the whirlpool engulfing in its vortex whatever floats within its eddying current,) let us now, briefly examine, the Means calculated to ensure its successful practice.

The chief object of Medical science, is the preservation in health & energy of the various functions, upon whose operation the life of man depends.

The wonderful reparative power of the body enables it, greatly to resist the destroying tendency of disease. But this kind provision of nature, does not render needless the use of art.

As the disorder advances, the waste gradually outbalances the supply, & if no new forces join the weaker side, death soon ends the strife.

It is the lot of our profession to act as guardians, both of public & individual health:

it is left for us, to study out the wily tactics of our common enemy; to foil his insidious approaches; & to delay that triumph, which over all mankind death must gain at last.

The method laid down by Lord Bacon, of discovering natural laws, by a rigid examination of nature's works; distinguishing by repeated observation, those occurrences which are constant, from those which are merely fortuitous, must strictly be followed in the investigation of disease.

But we shall find this no easy matter. Symptoms which we shall be unable to explain will continually obstruct our progress.

The malady is as often complicated as simple, & it is in such cases that the acuteness of our powers is put to the test.

We must therefore, diligently cultivate a close attention to every symptom which is contrary to the normal state: for it is not by the leading peculiarities alone, but by the union of these with the minor

indications, that we are to recognise disease.

The eye, the ear, the touch, nay, all of the external senses must be trained for this object: a matter well understood by the ancients, who in this particular, educated themselves with ardor.

The description of the countenance of coming dissolution, given us by Hippocrates, is unsurpassed by that of any modern author.

The skill which we so much admire in older practitioners, contributing greatly to their success, is a species of knowledge whose effects we see, but whose learning cannot be expressed.

It can no more be imparted to us by the instructions of its happy possessors, than can the rich harmony breathed from the instrument by the practised performer, be expected of the mere musical beginner.

This tactus eruditus, is no natural gift, time & practice alone confer it,

It were needless on such an occasion as the present, to attempt an enumeration of the various causes, an attention to which leads to correct diagnosis.

There is one point however, where from inexperience we are most apt to go astray.

I refer to our probable endeavors to recognise diseases, by their agreement with the published nosological systems; forgetting the modification which climate, season & the other external influences invariably produce.

We are to remember, that in practice we meet with few cases exactly alike in their course, & if, without the exertion of our own judgement & observation we make medical authors our guides, we shall most assuredly fail. Old forms of disease gradually lose their virulence & new ones spring up in their place, a truth declared by the *Roman lyrist,

"Nova febrium
Terris incubuit cohors."

* Horace

Do not understand me as thinking lightly of books, those fountains of recorded learning, in which the collected wisdom of the past & present is opened to our view.

But there is a great distinction between the statements of an author, whose material is experience, & those of mere compilers, giving us the opinions of others, without having proved them by use.

In short, the one writes having seen, the other, regardless of the improvement of science & wanting practice, takes this method of obtaining reputation & advertising himself.

Empirics we shall meet at every turn.

The avarice of men drives them to seek out every possible mode of gratifying their wants.

The aversion (not only of the public at large, but of men

respected for their attainments in other lore,) to search into the make & nature of the human body, renders the medical field, a wide one for deception.

The enlightened physician will view his profession in a nobler light, than as a means alone by which he is to live.

But while cupidity & credulity exist, we may be sure that medical impostors will abound.

After discovering the peculiar malady with which our patient suffers, the treatment yet remains.

This is equally important with diagnosis.

A mistake in either may prove fatal; correctness in both, will as far as human ability extends, alleviate or cure the disease.

That the treatment may

have its full efficacy, we should thoroughly understand the power & operation of our remedial agents.

The constitution, age, strength & sex, are to be considered here, as also in the determination of the complaint.

The reliance of the patient, upon our desire & intention to use all possible means in his behalf, should be complete. Faith in the physician, adds an energy to the healing power of his medicines, which it would be unwise in us to lose.

We all know the influence of kindness, in winning the confidence of those among whom our lot is cast.

It behoves us then to cultivate a polite, nay courtly address.

In the practice of their profession, medical men have often to endure the wayward caprices & irritability of patients, but he who allows

himself to be affected by such things, will soon find his friends outnumbered by his enemies.

We should remember, that the sufferings of disease unman the stoutest heart & that, that disposition, which in health is mild & affable, when laboring with pain, is often peevish & fretful.

But though kind & gentle manners may win our patients trust, if we would keep it, we must maintain a strict regard for truth.

Never encouraging fallacious hopes, nor magnifying the danger of the disease, that by the cure, our skill, may seem the greater.

These are means resorted to by those, whose limited knowledge prevents a reputation, founded upon its proper basis, a regular. medical education.

"Honesty is the best policy.. whatever the nature of our dealings

with mankind, & though this course may sometimes bring grief, to the hearts of hoping friends; yet on the other hand, when we give to their inquiries a favorable reply, it is received as more than a mere expression of our sympathy, & with its utterance, all fears are laid aside.

I am one of those, who believe, that even to the simple child there exists no reason for deception.

The drugs which he now obstinately refuses, he will take without a struggle, when the necessity of his condition is explained, & he sees by your truthful countenance, that their bitterness of taste will remove the burning heat, & aching of his brow.

Our directions should always be given with clearness & precision, that no mistake, injurious to the patient should fall upon our shoulders.

Envy & Detraction, will find causes enough to set their ready tongues in motion, without the furnishing on our part, of true matter for reproof.

I have thus spoken in a general manner, of a few of those qualities, whose exercise, united with a competent professional knowledge, naturally leads to an extended, useful practice.

It is not the place of one inexperienced, to attempt an exposition of the numerous causes tending to this end.

With more propriety we receive it, from the mouths of those, whose heads have whitened in the service of the afflicted, & whose advice speaks with authority, warning us of the rocks, & shoals lying in our path.

The study of Medical science, is to an inquiring mind most pleasing.

In its pursuit, we investigate the laws of nature which act upon the complicated structure of the body, displaying in their operation, the most striking instances of the wisdom & power of the creator.

Their contemplation fills us with astonishment, as we view the wonderful adaptation of our bodies to their earthly habitation, & in turn, the fitness of this residence to supply our wants; afford a healthy gratification to our senses; & lead us to a devout admiration of the Beneficent Giver of them all.

Bestowing upon us a machine, more curious than any devised by human ingenuity, he has placed a mind, a soul, as its director; & the wheels of life once set in motion continue, till the machine itself breaks up, & with all its intricate arrangement hastens

to decay.

To know the construction of this living engine: to learn how we shall repair its waste, & keep its varied parts in working order, has been the object of our toil.

It remains for us, (before setting forth to render this knowledge practical & useful to our fellow-men,) to acknowledge our gratitude to those who have led us in the path of learning, & bidding farewell to them, & to one another, gird up our loins, & commence the labor of our lives.

Robert W. Forbes.

VI

Dissertation

on

The importance of the General Diffusion of Elementary Education.

By

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Importance of the General Diffusion of Elementary Medical Education

In order to the just appreciation of any science it is necessary that it should be thoroughly read and understood. That its great authors should be remembered as receives as truths. That its hidden mysteries should be brought to light and explained. Its judgment and reason should be brought to bear upon it, and that every principle should be subjected to the ordeal of actual experiment. It is a fact that just in proportion to the amount of our knowledge of any science, is our confidence in that science increased or diminished.

We may hear of the rapturous delights of the student of nature, but we cannot see, or feel his cause for such emotions till we have made ourselves familiar with the beauties.

We may be told of the beautiful & delicate organization of the plants which are in cultivation in

such rich profusion & variety around us, but we neither can that beauty or appreciate that delicacy, till we have made them peculiar objects of study — till we have examined such beauty, seen in what it consists — till we analyze their delicate structure, and behold the beautiful adaptation of each part to the performance of its particular functions — the harmonious arrangement of its several organs so as to form the appearance of a perfect plant containing within itself all the organs necessary to its life, nutrition, growth, and reproduction

[illegible] of the [illegible] [illegible] [illegible] which such [illegible] [illegible] [illegible] [illegible] [illegible] the [illegible] [illegible] [illegible] [illegible] the changes [illegible] [illegible] Has he found the greatness of the science? No, nor will he till years of study toil and experiment have opened his mind for the rays of truth to shine in and light up a world where before, all was chaotic darkness

Point him to the sky above him and he exclaims "I see but the same sun, moon and stars which

have shown me it. The same brightness since my remembrance. Does he by such casual observation comprehend the magnitude of the universe? Does he see in each twinkling orb a world peopled by myriads of intelligent beings? — It is to him but the simple light spot which he only knows as a star — here all his thoughts fix cease — or should they even chance to linger for a moment, it is but to wonder with a childish simplicity what it is — what power holds it there, & makes it shine so brightly. — The spacious firmament presents to his unstudied eye but a grand assemblage of beauty, without order, or design — and thus it will ever remain till he examines, calculates, observes & marks the powers, motions, laws & uses of the whole. Then, and not till then can he comprehend the height and depth, the length and breadth of heaven — not till then can he fully appreciate the greatness, wisdom, goodness & power of its Author.

I need cite no more cases, for it is true in every branch of science, that to know & feel its importance we must feel its truths — be acquainted with its secrets —

familiar with its deep & sublime workings, and its application to the cultivation, improvement, expansion and development of the powers of mind, as to the amelioration of the condition, relief of the wants, & healing of the diseases of the human family.

But this Importance of Education is pre-eminently indicative in the Science of Medicine, for the following reasons.

I.st "Because it would raise the standard of medical attainments among physicians

II.d "Because it would give a double blow to Empiricism

III.d "Because Medicine is the Science which is productive directly, of the health & consequent usefulness of man

IV.th "Because indirectly through the health, it promotes the moral, intellectual and physical developments of the human family -

V.th "Because it would increase the pecuniary advantages - diminish the perplexities and lighten the cares of the physician.

7." Because it would raise the standard of medical attainments among Physicians

The march of Science is ever onward — and as it advances — as the masses become acquainted with its truths, its champions are sure to make higher & higher attainments — This indeed is the true secret of the advance of Science, and the march of intellect — and thus it ever has been. As the multitude is elevated the master spirits are stimulated to make greater & greater efforts — and thus they instinctively rise above the mass. The brightness of their glory which was for a moment eclipsed shines forth again with ever increasing lustre — do we require proof? The tiny school boy now walks erect, & fearlessly where Newton, Franklin, Davy and Locke once faltered, stumbled, and fell — the multitude feels at home, and at ease where the great sages and philosophers of ancient times strugged — bewildered, lost, and troubled. And now, amidst all this light and knowledge where are we to find our own philosophers and sages? Are they eclipsed — or is their brightness dimmed by this general effulgence? No. They rise as far above the vulgar mass as

in brightness of the secondary sun hitherto eclipsing the twinkling of a star. And it is true now, and ever has been, that let the multitude advance as it may no matter how far, or how high. Still there will be those in every branch of science who will take the lead and be looked up to as the great teachers & practical applyers of its great principles with various receptives and convincings power. There will ever be suns and moons in the world of science whose light and heat will be seen and felt throughout the whole of its vast estate. It is necessary in order to make a man acceptable as a teacher, a practitioner in any science that he should be better informed than those whom he is to teach, and superior in his superior knowledge to those whom he is to practice among. If you educate the multitude in the science of medicine, it will be necessary in order to the respectability & success of the doctor of Medicine that he be superior in theoritical & practical knowledge to his patients. That his professional knowledge be increased in due proportion to the advancement of those among whom he is to practice.

Every well educated & intelligent physician must and undoubtedly does see the necessity there is for an advancement in medical science among its practitioners. As a profession they are lamentably ignorant, not only of the practical applications of the science but also of its theoretical principles — and under the existing circumstances it is impossible that it should be otherwise — the common people are known to be ignorant of even the first principles of the science & therefore known to be incapable of judging of the physicians merits as a practitioner — so that there is a strong inducement held out for the mere tyro to go into practice with just as little knowledge as it is possible for him to pass an examination with — and this requisite amount is often quite inconsiderable — particularly when backed by a good "Graduation Fee".

There is no practical science with which the great mass is so little acquainted as with that of medicine — Why is this? Because in the days of ignorance when the whole science consisted of nonsense, spells, incantations, & charms, witchcraft, and

superstitions it was necessary in order to render the people more gullible — more easily deceive that they should remain ignorant of the true state of the profession — & it is a lamentable fact that with many who are themselves, and are generally allowed to be regular practitioners, and who cannot even show their mystical sheepskin this same secrecy is necessary to success — success not in curing but in re-curing patients.

Ignorance is form of mystery — This is conclusively proven every day. It does not confine itself to medicine but is seen in everything. even religion is not free from it and it is only necessary to perpetuate this ignorance in order to be perfectly successfull in practising mystery. — See with what care the mysteries of the Church of Rome are guarded. How carefully is every avenue to light and knowledge blocked up. See how education amongst the masses is in every possible manner retarded & even denounced as heresy and how is the system changed and modified to correspond to the different grades conditions & education of its votaries — And why? Because every mem-

he of the "Holy See" from the Pope to the humblest Priest - is aware that light & knowledge are fatal to mystery - is aware that the greater the light & [illegible] the liberty - & that the system must be modified & made more rational in order to claim the confidence & support of its enlightened disciples. They know that to spread [illegible] of "Holy Mother Church" & let the misguided & priest-ridden Catholic see the whole of his religion would be to turn him from it in disgust. - And now I would ask if the same is not the condition of many an ignorant - unscientific practitioner? Does not his success depend upon his ability to cover up his ignorance & throw a veil of mystery over the science? - He knows that to cast aside this veil - let his patients see the true state of the science & his want of the true principles of correct practice would be to destroy their confidence in him & loosen his hold upon their support - & that in order to regain that he must show undoubtedly testimony that he is well prepared by theoretical and practical attainments to assign proper reasons for the morbid conditions of his patients - and to use

the means necessary to counteract these conditions such, and such only are the men who are fit to be trusted with the lives & health of men. Such only could be trusted did men know how necessary such attainments are to the success of the physician —

Is not the elevation of the standard of medical attainments desirable & necessary? Some will doubt. Then why not use the means to this end? Can it be accomplished by any other proposed means? No. for so long as invidious Ignorance can successfully cope with benevolent Science there will be many whose cupidity will overcome every noble sentiment and they will continue to practice so long as they can get patients to practice upon. Is it proposed to raise this standard by increasing the prescribed course of study? This would indeed be well but it would be idle, for it is easy to study a certain length of time & still be unfit for the practice of medicine. It is even easy to elude the regulations of any school where regulations and rules are as lax as the generality of our medical colleges. Is it proposed to increase the severity of the examinations? There are many, godly

pass this ordeal with credit to themselves who are as ignorant of real practical knowledge as those who have never studied the science of medicine. Especially so, particularly in those colleges where the advantages for gaining practical knowledge are deficient. Besides this the competition between the various schools, in this money loving country is so great & the desire to swell the list of graduates so strong that it is impossible to contract these proposed measures & uniformity could be secured as is shown by the present diversity in the requirements of the different Colleges of our country. Until this means is used then, the ranks of physicians will be disgraced by the unscientific and the ignorant. The life & health of many a useful member of society will be sacrificed by being placed in unskillful hands. Disgrace & reproach will be heaped upon the Science through the ignorantness of its professed followers and Empirics like self righteous Pharisees fasting & living on others wisdom will build themselves up on their own good works & thank God the while that they are not like other men, extortioners, unjust,

VI. This General Education is important; because it would give a death blow to Empiricism

What is Empiricism? In its modern and true sense it is the art of making people think that the human system is the proper receptacle for all sorts of nostrums and that a fool is better than a wise man

Its theory points out the most approved method of persuading men that they have individually the greatest combination & complication of diseases that ever afflicted any member of the human family since the days of Adam, Job himself not excepted and that a little of all kinds of known and some unknown remedies are necessary to effect a cure -

Its Practice consists in sticking as many & telling plasters upon the patient as the extent of surface will allow - selling just as many dollar bottles of Syrup and Bitters as many half dollar powders into him each as it can possibly tolerate and charging just as much for services as circumstances will admit. Therefore he who has the faculty of getting the most plasters upon and the most mon

cine into his patients no matter by what means or by what origin is the most successful Quack. He who can tell of the greatest number of wonderful cures is the man who is received by the gaping and astonished multitude with the greatest confidence. And what is the result of all this to the patient? derangement of all the functions — disease of the whole system — permanent ill health — moral, intellectual, and physical loss and imbecility — premature old age & untimely death — Is proof of this asked? My own limited and hasty observations furnish me with painful & startling proof. and what must be the result of the experience of those, whose opportunities have enabled them to make infinitely more extensive and careful observations than it has been possible for me to make? — Is it asked how education is to remedy this evil? I answer: By leading men to think for themselves by inducing them to observe & choose the course which an enlightened mind will feel & know to be the right course — by guiding them to a just appreciation of the various theories & modes of practice

by enabling them to see the science of medicine stand upon the broad basis of truth, supported by reason and actual experiment — by divesting the science of that veil of mystery which still tends to a great degree its true character — by raising the standard of medical attainments among physicians so that their ranks may be free from empiricism & they be able to command the respect and esteem of the people — by showing the transcendant superiority of the scientific well-studied practitioner to the unlettered quack — by showing them how absolutely necessary is a correct theoretical knowledge of the science joined with practical experience to the usefulness of the physician and consequently to the health & usefulness of his . Education will do all this. For proof of this assertion we have but to turn to every day's experience — Who are those who most readily swallow every new humbug, whether in medicine religion or the more common concerns of life? Are they not — almost invariably the weak minded and uninformed? Are they not — those who

think and reason the least? Can you find in the
of your acquaintance a man of good education &
whom you respect for his unblemished course thro'
life, and his well balanced mind who is a believer
in Quackery? Did you ever know a man well edu-
cated in the ' ciples of medicine who embraced
it? It is true there are some few cases, but as far
as my observation extends they were men whose
motives I have every reason to despise. He was
invariably actuated by an avaricious desire for gain
without regard to consequences. On the other hand,
who are they that invariably employ the wise learned
and practical physician? Are they not the sober
thinking ! ! such men know that
facts are preferable to pretensions - that knowledge is
far less dangerous than ignorance - that correct the-
ory is necessary to correct practice - that in order to
understand the diseases of the human [illegible] it is
necessary that a man should be acquainted with
every organ and its appropriate function, and that
in order to treat these different arrangements of the
several functions successfully, it is necessary that he

should understand the nature, character, tendencies and applications of the medicinal agents, and their adaptation to particular states of symptoms. You cannot convince such a man that these things are necessary. You cannot convince him that pretending ignorance is preferable to manifesting science. You cannot palm off ignorance upon him instead of knowledge. Were all men thus educated Quackery would soon become an obsolete term or only used in the history of past ages.

The reason why men embrace it is because they cannot comprehend or appreciate the principles upon which true practice is founded. They do not stop to think of the difference which must be between science & pretension, and therefore they are liable to become the victims of men of design & cunning, who can come to them and tell the most wonderful stories and make them appear most plausible, and they are at once received as the greatest physicians. With such men a mere newspaper advertisement of some secret remedy purporting to have

him obtained of some venture of Quinine is sufficient to restore their equilibrium and set them to devouring it with the greatest avidity. The mind unused to the contemplation of the human system is apt to think that there is in the nature & organization of man something unaccountably wonderful & mysterious, and he consequently thinks that in order to treat the diseases of this machine it is necessary to employ some mysterious agency. The Quack is ever ready to favor such impressions & even anxious to perpetuate & multiply them. He favors erroneous impressions, increases wonders, magnifies mysteries, and explains the phenomena of life by some fanciful & at other way theory & is received into the confidence of some misguided thoughtless person who in the common course of such events pays very dearly for the curse of Ignorance. — Educate a man in the Elements of Medicine give him a concise view of Anatomy, Physiology, & General Therapeutics & if he is a man who can lay any claim to the possession of common sense, you can never make him an honest believer in Quackery.

III." This Education is indicated. Because Medicine is the scum which is placed directly over the health and consequent usefulness of man

Health is the richest of all earthly blessings while in its pure enjoyment we have a fount of happiness within which the natural circumstances and wants of life can never drain or corrupt. We love to be above the miserable vicissitudes incident to our situation & rejoice in the fulness of our own strength. Should fickle fortune cast us upon our own resources, we feel strong, and ready to grapple with our destinies like men. No difficulty can overcome us no dangers intimidate, but at disease gains his iron grasp upon us and the world will seem the great storehouse of misery. What was before considered pleasure has lost its charm & now finishes pain. The great objects of pursuit are neglected lose their power to retain our attention, and often become objects of decided disgust. And a mission this lead of vigor and activity of mind and body we feel a languor which we in vain strive to throw off. Our thoughts and feelings do not run out after the great works a-

round us. Selfishness takes the place of benevolence — pain that of pleasure — inertia and inactivity that of efficiency — To be useful under such circumstances — to take hold of the active duties of life with such feelings with any prospect of successfully accomplishing them is impossible.

We are led in view of all this to enquire what are the causes of disease which education is to obviate? Multitudes of diseases arise from the improper use of medicine — It is often taken without the advice of the physician and where no medicine is indicated — taken in injurious quantities & frequently of a nature which under the circumstances is absolutely contra-indicative and therefore its tendencies are injurious — not only as it regards the particular disease in hand but also with system generally — rendering it more susceptible to depressing influences and therefore more liable to take on disease action.

Another great source of disease may be found in the indiscriminate use of the thousands of specifics and certain cures which crown the shelves of our Apothecaries — Many of which are mere

indiscretion and multitudes indeed are when administrin by [illegible] of the judicious physician. Another source still is found in the employment of ignorant pretending quacks who with a lie in their right hands "go about" like their father "seeking whom they may devour" - misleading by stratagem and artifice the weak, uneducated and credulous - This I may confidently affirm gives rise to more chronic diseases than any other, or all other causes combined. It is impossible to find a family which has been under the medical direction of a quack for any length of time, and I may almost say any individual or family, who is not affected by some chronic and oftentimes incurable malady brought on by the constant use of immature - unwholesome positively injurious stimuli - And how can it be otherwise? It is a well known and established law in medicine that the long continued use of any stimulating article, is injurious to the healthy economy and reacts upon the system causing morbid actions - And let me ask where is the patient of [illegible] quack who if he follows since-

tions is not constantly using some such article? For it is well known that it is the business of the Empiric to sell as much of his medicine as possible. Then how important that all these general principles which any well educated mind cannot fail to appreciate and apply should be understood — How important that the above causes of disease should be thoroughly appreciated and carefully avoided — That the general causes of disease with its symptoms be known — its danger & the necessity for prompt and efficient treatment in its first or forming stages urgent — How necessary that the general structure of the human system should be comprehended — That the various organs with their appropriate functions should be studied and the importance of their healthy action appreciated.

How important that all should know when and when medicine is indicated and enough to avoid it when not indicated, and moreover how important that the merits of the scientific practitioner should be justly valued — —

Medicine [illegible] Education would have to that

results and if so how materially would the health and longevity of mankind be increased. The great obstacles to the success of the physician would be removed. These do not in many cases exist so much in the disease of the patient as in his own ~~and~~ his attendants ignorance and want of confidence. Ignorance in regard to the cause nature and symptoms of disease — of the necessity of prompt and efficient treatment in the incipient stages. — of the treatment indicated, and the effects to be produced by medicine — Want of confidence in the practitioner and the mismanagement for his recovery —

IV." This Education is indirectly, Because indirectly through the health it promotes the moral, intellectual and physical development of the human family –

Other sciences are exalting and ennobling. They expand the mind – elevate the tone of thought – and raise the affections – But as health of body is necessary to the healthy action of the soul, to the freedom of thought – soundness of reason – strength of purpose and ability to perform – it may be seen that medicine is the science which outweighs them all. We have seen that health of body is necessary to usefulness and that it is to moral physical & intellectual development follows of course for a man's usefulness only as one or all of these are developed.

1." That health promotes the moral developments.

It is true that men may lead good, exemplary lives while afflicted by sickness and distress – there are indeed some bright and beautiful examples of moral worth exhibited in the lives of those

who have been thus afflicted. But who have in all ages been the great champions of truth? Who by their enduring efforts — their hard, unceasing labors — their zealous devotion & sacrifices have been its great promulgators in the world? Are they not & have they not ever been those who have enjoyed firm health of body and consequent soundness of mind? Does it not seem reasonable that it should be so? Is it not in accordance with the spirit of gratitude and love? And does not the man who enjoys the rich boon of health sin against his own nature and every principle of virtue when he refuses to cultivate morality in his own heart and extend its happy influence among his fellow men?

2. That health promotes intellectual developements this may be proved by a multitude of examples which are now and ever have been before our eyes. But as in the moral so in the intellectual world there are exceptions to the general rule — for we have some noble examples of intellectual greatness in those who have suffered greatly from ill health. But how few are the cases and how instructive are the lights

they shed. Our eyes were for a moment dazzled by their effulgent brightness but disease and death soon extinguished it forever. Wherever we see intellectual powers of a high and enduring character we invariably find it standing upon the firm basis of good health. Do we need proof of this? Examples upon every page of history and in every days experience may be cited — look again at Newton, Franklin, and a host of others. Would these master spirits have shone forth with such a steady and enduring light had their bodies been racked by pain or enfeebled by disease? Yes they might have shone, but it would have been the transient flash of the meteor or the eccentric blaze of the comet. — But now they shine forth as the sun and the beautiful fields of science bud and blossom as the rose beneath their life giving rays.

3". That health is necessary to physical development. Of this we need no proof — its truth is too palpable to be overlooked by the most common observer —

V. This Education is important. Because it would increase the pecuniary advantages and diminish the cares of the regular practitioner.

1st That it would increase the pecuniary advantages of Physicians.

It is a well established fact that physicians receive less remuneration in proportion to the actual amount of labor performed than the members of any other profession. Why is this? Simply because men are less capable of judging of the merits of the physician than they are of any other profession. The Theologian and the Lawyer can make direct appeals to the judgment, prejudices & common sense, and those it has can make. The strongest appeals are chosen and looked up to for counsel and advice — The masses have a knowledge of the elements of law and theology and can appreciate the merits of the two professions. Not so with Medicine; for men do not as a general exercise common sense on this subject — of right and wrong practice they have no idea, and as has been before remarked they know nothing of the elements

of medical science - therefore no appeals can avail. Conscience here is dead through ignorance pride - is obstinacy. and common sense for want of exercise is weak and enfeebled. Is it strange then that they should fail to appreciate and remunerate the services of the physician? How can they prize that of which they know nothing? Men are not, and ought not to be willing to pay for any thing of which they are entirely ignorant. And now to obviate all this we have said that education is necessary - This is proven by facts already established (viz.)

1st That it would elevate the standard of medical attainments among physicians and thus entitle them to greater rewards.

2nd That it would clear the professional ranks of those who are a disgrace to the profession - but who by cunning and artifice impose upon the ignorance and credulity of the community, and thus obtain a considerable share of the public patronage.

3rd That it would lead to the true appreciation of scientific worth

4th — It would give Empiricism its death blow and consequently have over to the care of the profession the multitudes who are now the dupes to the arts and delusions of designing men.

5th — That it would promote moral, intellectual and physical developments and thus increase the liberality and curiosity abilities of man —

At first thought it would seem as though the extension of this knowledge to all classes would have them to practice upon themselves, and also that it would increase the number of practising physicians —

I would object to the former by saying that a mere knowledge of the elements of the science would not make a man fit competent to practice the art, nor on the contrary make him fit that he lacks the one great qualification to success. Practical knowledge must supply him forcibly with a feeling sense of his own ignorance —

That it would increase the number of practising physicians I do not believe, more especially when we take into account the multitudes of quacks

who now gain such a share of patronage as their independence and the credulity of their patients enable them to obtain — Nor do I believe that it would increase the number the number of regular physicians but rather diminish it; for many as has already been seen would be obliged to relinquish their claims to professional usefulness. Besides this there are other pursuits which open richer and more enticing fields to the avaricious or man of pleasure — there are other spheres where philanthropy can exert her soothing powers and heavenly influences — where ambition can soar higher and reap a harvest of fame. —
Only enterprising and efficient men could ever hope to be able to practice successfully under such a state of things and as the field will only support a certain number these must be well prepared and efficient men. The surplus would be drawn to the other departments of science and art where riches can be more easily obtained — where honor and fame weave brighter garlands with which to wreathe the brows of their votaries — the —

perplexities trials and toil are less abundant and pressing and where sickness, sorrow and death are more infrequent —

2d — That it would diminish the cares and perplexities of the physician —

These are directly dependant upon the ignorance of his patients and his consequent want of confidence in them. He feels that all the responsibilities rest upon him — that no judgement or discretion will be used by them and that his remedies are liable to be thrown away and his directions disregarded and his patient to die upon his hands. The young unsophisticated physician sinks beneath the accumulation and the accumulating weight of his cares. How many a bright and sensitive ornament to the profession has thus been sacrificed to the ignorance of his patients. The proposed plan diminishes these — it gives the physician confidence in his patient and the attendants. he feels that a load is taken from his shoulders — he knows that so far as may be his prescriptions and directions will be attended

to with discrimination - that all his efforts to benefit this patient - will be viewed in their true light and calculated — instead of clamors - distrust and obstinacy a cordial approbation and hearty coöperation with expressions of heartfelt gratitude which will cheer his heart and encourage his hands.

The ignorant dare to call a physician only to tell him with knowing winks, nods and leers what is their opinion of the disease - What they think of the mode of treatment to be pursued - And woe to the patient - and double woe to the physician who will not acquiesce in the decision - The hosts of incongruous - heterogeneous mixtures which are proposed at sea excite pity and indignation and the only course left for him to pursue is to modify and counteract the home made and wholesale practice and as kindly, gently and imperceptibly insinuate his own as possible and after all his pains trials & perplexities have to hear it trumpeted in every corner of his practical domain that a case which cost him hours &

days of toil and study with many a sleepless night has been cursed by [illegible] ignorant- conceited old woman - and he is obliged to look calmly on & see the gratitude so justly due to himself bestowed upon some object - which in truth deserved imprecation rather than praise - and even the humble pittance charged for his unwearied attentions is doled out rather as a gratuity - than as the reward of true merit - more as an act of charity - than as his well earned and just due.

Among what class of persons have the scientific man rather practice? Where is he best received and most confidently looked up to? Where does he feel that his efforts are appreciated? Where his cares least - and his perplexities fewest? Among the ignorant - or the learned? Among the obstinate - self sufficient - and bigoted which are found in the houses of the ignorant - or among the modest - refined intelligent - found in the habitations of the educated? I need not reply - Who are the most likely to call the scientific man? Who most to appreciate his merits?

Who most ready to reward his [illegible]? To extend to him the most hearty co-op[illegible]ation and in short do all for him which his station, his wits, his provations so justly merit? Just look [illegible] this city famous for its literary men - its men of sound philosophy - its men sterling worth - high and general scientific attainments, and the answer is conclusive. I believe that to a [illegible] you will find them the supporters of the Scientific and Practical Physician

P. M. Fowler

VII.

Dissertation on The Foetal Circulation.

By

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The Foetal circulation,

differs in many important particulars from that of the adult. These peculiarities so far as the anatomical structure of the vascular system is concerned, consist chiefly in the placenta, the umbilical vessels, the ductus venosus, the ductus arteriosus, and the foramen ovale, while there is an important deficiency in the pulmonary circle, on account of the inactivity of the pulmonary organs.

The placenta is the connecting link between the maternal and the foetal circulation.

On this organ, the umbilical vein arises, by very fine branches. These are collected near the surface of the placenta into one trunk of considerable size, which passes along and forms a large part of the umbilical cord: it enters the cavity of the abdomen at the umbilicus, and proceeds backwards, upwards, and somewhat from the left to right, running along the anterior edge of the suspensory ligament of the liver, until it reaches the

umbilical or longitudinal fissure of that organ. On its passage through this fissure, it gives off several small branches to the right and left lobes of the liver, and proceeding onward until it reaches the great transverse fissure, it empties into the left branch of the sinus of the vena portarum. It opens on the anterior face of the sinus of the vena Porta, and on the posterior side opposite to this is the orifice of the ductus venosus.

Through this canal flows a portion of the blood of the umbilical vein, and proceeds to join either the hepatic vein near its junction with the vena cava abdominalis, or ~~into~~ the vena cava itself, just below the diaphragm, while the remainder of the blood from the umbilical vein, is distributed by the vena porta through the substance of the liver, received by the hepatic veins, and is sent through the vena cava ascendens, to the right auricle of the heart, which it enters as in the adult, in common with the vena cava descendens.

The foramen ovale is a large orifice of an oval form in the septum between the auricles.

Through this foramen, a portion of the blood of the right auricle passes to the left, there to be subsequently to the systemic circulation.

The remainder of the blood of the right auricle is forced by its contraction into the right ventricle, from which it is propelled into the pulmonary artery, only a small part of which reaches the lungs, while by far the largest portion is received by the canalis arteriosus, one of the vessels peculiar to the foetal state.

This canal which is larger than the aorta of the foetus, arises between the two branches of the pulmonary artery, in such a manner as to appear to be a continuation of it, and discharges itself into the aorta, at the lower part of its curvature, just below the orifice of the left subclavian.

The internal iliacs in the foetus are larger than the external, but they send only small branches to the pelvic viscera, which are at this time but partially developed, the main trunk continuing forwards, inwards, and upwards, along the lateral parietes of the urinary bladder, they take the name

of umbilical arteries, and meeting at the umbilicus, they separately accompany the umbilical vein to the placenta, with the minute terminations of which they finally communicate, and thus complete the foetal circulation.

Such are the general facts, concerning which anatomists and physiologists are mostly agreed. But there are many other points, intimately or remotely connected with this subject, concerning which there is the greatest diversity of opinion.

Some of these points which are to be still regarded as unsettled, relate to the adult in common with the foetal circulation, while others are peculiar to the latter alone. Of the former I may mention, the hepatic circuit and the arrangement and function of the hepatic vessels; of the latter that part of the circulating system found in the placenta.

Neither digestion nor respiration is properly performed by the foetus. The foetal secretions also are extremely limited, for the secretory organs are not sufficiently developed to perform these functions, any more than the muscular system is for muscular contraction,

and there is no outlet for the expulsion of the excretions of the functions were performed, and when, as is the case with the liver and some other of the glandular viscera, particularly in the latter stages of utero gestation, various fluids are secreted, it is only to be mostly absorbed again into the circulation, consequently the purification of the foetal blood is not, and cannot be effected in its own system; but is sent to the placenta, and is either subjected to that process there, or is actually received into the vessels of the mother, and undergoes the process of depuration as a portion of her own.

The question is, if such transmission is effected, how it is done, and what is the anatomical arrangement of vessels, by which this process is carried on.

This is a question of much doubt, inasmuch as it has been investigated by many of the most expert anatomists, and with very different results.

The theories deserving notice on this point, would seem to arrange themselves under two general divisions. Viz. those who assert that there is a direct vascular communication between the uterus and the placenta;

and those who deny it.

The principal arguments in favor of the existence of utero placental vessels as they are called, are, the following: the placenta has been seen to live and grow after the expulsion of the foetus: that the detachment of the placenta from the internal surface of the womb, either during pregnancy or after parturition, is generally followed by more or less hemorrhage, thereby indicating a rupture of vessels; that uterine hemorrhages cause the foetus to die exsanguious; that blood sometimes flows from the placental end of the cord, thereby constituting sometimes dangerous hemorrhage; that orifices have been noticed similar to mouths of vessels on the internal surface of the uterus immediately after the separation of the placenta; that the best mode of arresting uterine hemorrhage is, to excite the contractions of the organ; that various substances injected into the uterine vessels, pass into the organs of the foetus; and finally that these vessels have been repeatedly injected by respectable anatomists.

On the contrary it is objected, notwithstanding

the above arguments, that no such vessels exist.
for it is believed, that this direct vascular communication is not proved by the fact, that the placenta may live and grow after parturition, for it may, and probably does form adhesions to the internal surface of the uterus, in consequence of excited action, (as other contiguous parts often do) as appears occasionally from its obstinate retention after delivery, or as Velpeau supposes, it may be nourished, as he believes the foetus is, by a fluid similar to blood, exhaled by the uterus, ... absorbed by the vessels of the placenta.

The occurrance of hemorrhage after the separation of the placenta, is not constant, and if it were, Velpeau says, it would no more militate in favor of them against immediate anastomosis, for the blood, says he, may just as well be poured out by exhalation as from ruptured vessels. But he does not claim that this differs in any respect from ordinary blood. I do not think his argument good, for he has asserted in the same chapter, that the fluid exhaled from the internal surface of the womb, differs essentially from common

arterial or venous blood so much so that he makes it one of his leading arguments for proving that the blood does not flow in an interrupted stream from the uterus to the foetus.

Although the foetus of a mother dying of hemorrhage, may be found bloodless, yet it must be remembered that this blood may flow in part, and probably does in many instances, from the placenta, and of course from the foetus itself, as in cases in which the placental attachment is over the cervix uteri.

In some cases of fatal hemorrhage, the foetus has been found containing its ordinary quantity of blood, in such cases it comes from the uterus alone.

The argument founded on the fact that dangerous bleeding has occured from the placental end of the cord, has not been answered well by Velpeau, who says, it is not because the circulation continues to go on between the uterus and the placenta, but it is simply owing to the contraction of the womb and of the ~~the~~ vessels of the placenta and cord, ~~and~~ it is only the after birth disgorging itself of the fluids it contained, and not new blood coming from the mother.

It seems strange indeed to me, that Velpeau should suppose the mere evacuation of the placental blood should occasion alarming symptoms, while the maternal vessels still retained their ordinary quantity, and while the entire expulsion of the placenta, with all its contained fluids, would be followed by no such results. I think it cannot be denied, that the drain must be in such cases from the maternal vessels, and the argument would have been better answered, by allowing that in such rare cases as they are, circulation must go on, but that it must be effected by communications unnaturally free, otherwise it would, or might, always happen, and that this connection with the uterus might be either by morbid growths, or by organized and perhaps highly vascular adhesions. If it were granted that in these cases all is natural, it would appear to me to establish the fact of the existence of communication more free, than can be effected short of vascular connection.

With regard to the injection of these vessels, it may be said, that very many accurate observers have utterly failed in detecting them, and it would seem that

vessels sufficiently large and numerous to transmit the amount of blood claimed for them, could not well be overlooked when examinations are made under favorable circumstances. It is possible that their injection was effected by propelling fluids of so penetrating a nature that the passed as they have been found to do, from one vessel to another, between which there is no communication.

I will now proceed to name a few of the variously modified theories, coming under each of the two grand divisions. Of the first, claiming utero placental vessels, one of the oldest theories advocated by Wharton and opposed by Haller, was, that the placenta consisted of two halves, or portions, the uterine or maternal, and the membranous or foetal, that the uterine vessels ramify in the former, and the vessels of the cord in the latter, while at the union of these two portions, these two sets of vessels communicated with each other in some indeterminate ways.

The falsity of this opinion is evident, when on injecting the umbilical vessels, their branches are seen running to every portion of the surface, both maternal and foetal.

Another theory is, that the uterine blood is transmitted

by the arteries to the placenta, that their capillaries ram ify in contiguity with the capillaries of the placental vessels, and that the various changes are effected through the varieties of these contiguous vessels, in a manner similar to the operation performed upon the venous blood contained in the vessels spread out upon the sur face of the air vesicles of the pulmonary organs.

After this change is effected, the uterine blood is return ed by the uterine veins, to be mingled with the matern al blood, while that of the umbilical arteries is returned by the vein to the foetus.

In support of this we have the following facts: injections of the uterine arteries are returned by the uterine veins, and of the umbilical by the umbilical vein, and in neith case does it pass from one set of these vessels to the other. It is believed, that all the changes wrought upon the foetal blood, may be effected by this arrange ment; since it is now agreed that all physiological operations of the kind are performed through the walls of vessels or of cells.

The last theory I mention is, an old one lately advo cated by Mr. Stevens of England. The placenta is thought

to consist of a mere congery of vessels to allow of the connection between the uterine and veins by capillary vessels. The uterine arteries are supposed to terminate in the ~~uterine~~ umbilical veins, and the umbilical arteries in the uterine veins, by intervening capillaries, consequently the foetal blood passes directly to the mother, is carried the round of her circulation, is exposed to the action of air in the lungs, and receives its nutritive qualities in common with her own; while the maternal blood is being transmitted to the foetus, the placenta acting in these cases only as a medium of communication between them. To this doctrine we object as to all those that have been already named, that these vessels are not generally supposed to be found; that injections thrown into them do not follow the course here described, but are returned from the uterine arteries by the uterine veins, instead of passing out at the umbilical, and from the umbilical arteries by the umbilical vein, instead of the uterine. Besides the blood of the umbilical artery is acknowledged to differ very essentially from arterial blood, not being possessed of the bright scarlet color, containing

also more serum and being less coagulable

It is further objected, that the maternal blood being assimilated for the nutrition of adult organs, would not be applicable without some change, to the growth and nourishment of the foetal structure, for it is found by microscopical examinations, that the red globules of the foetal blood, are very much smaller than those of the mother, hence we infer that they are assimilated by the foetal organs, and not transmitted from the parent ready formed. These globules so exceedingly small, move of course in vessels of proportionate size, so that we may well infer, that were the maternal blood to be introduced into the foetal circulation, it would obstruct these exceedingly small and delicate vessels and occasion serious and fatal congestions.

But the theories of the second class of which I spoke, affirm, that there are no vessels continuing from the uterus to the placenta.

A great amount of evidence can certainly be adduced in favor of this doctrine, and going to show that the connection between these organs is of the most indirect

above. Thisberg made several experiments which show, that the fluids of the foetus circulation is not stopped off when the mother die of hemorrhage.

Magendie injected camphor into the veins of a pregnant bitch, and extracted a foetus from the uterus at the end of three or four minutes, the blood did not exhibit the slightest odor of the substance, whilst that of a second foetus extracted at the end of a quarter of an hour, had a decidedly camphorated smell. This was the case also with the remaining foetuses. The transmission of this substance may take place by imbibition, or by the process of exhalation and absorption of which I am soon to speak, and the length of time required for the detection of the odorous substance, strongly favors this idea, for if any direct communication, ~~comm~~ existed between the mother and foetus the transmission ought certainly to have been effected more speedily, for the diffusing odorous substance is known to go the round of the circulation with the greatest rapidity.

The transmission of substances from the foetal to the maternal vessels is yet more difficult.

Magendie was more able to affect the mother by poisons injected into the umbilical arteries, and directed towards the placenta. It is nothing that the foetus becomes contaminated by certain constitutional diseases under which the mother may be labouring, for these affect any and all the secretions.

Another fact which is said to prove the indirect nature of the connection, is, there is a total want of correspondence between the two circulations. The beating of the foetal heart is about twice as frequent as that of the mother.

This certainly proves that the foetus carries on an independent circulation, but I know of no reason why a capillary communication may not exist between two bodies the pulsations of whose arteries do not exactly correspond, for no one I believe supposes that the foetal circulation is effected by the action of the maternal heart; why then need its pulsations be synchronous with those of the mother.

All are agreed that the connection is no more direct than capillary, ~~not~~ even Mr. Stevens who makes it more direct than any body else, and supposes the foetal vessels to terminate in, and be actually

continuous with the maternal vessels, but conforming to the great and unexceptionable law of the circulation; that arteries and veins never communicate but by intervening capillaries.

But in order to secure every advantage for coming at the truth of the matter, we should not depend solely on anatomical examination alone, the results of which are so diverse, but also consider in a general way what is the changes to be effected upon the blood passing out at the umbilical arteries before it is returned by the umbilical vein; for knowing what the changes are and understanding as we do, the general physiological principles that govern the performance of these functions wherever they may be carried on in the animal economy, we may be able by inductive mode of reasoning, assisted by anatomical facts to arrive at just conclusions.

The changes wrought upon the foetal blood appear to be, a loss similar to respiration; and the acquisition of nutrient substances for the nourishment of the foetus.

I have said the foetus has no respiration.

That this function is not performed in the same manner as in adults is very apparent, but attempts have been made to show that the absorption of oxygen being essential to life in all organic beings, all animals respire in the foetal state.

It has been taught, that the foetus breathes like aquatic animals, absorbing oxygen by the lungs from the air contained in the liquor amnii, but this notion is controverted by the fact, that the liquor amnii is not always to be found in the bronchial tubes, and from the venous state of the blood of newly born foetuses, and in those whose respiratory passages are closed. Further, if the foetus really breathed, the lungs would be permeable, whereas they are at birth quite solid. Another fact is positive proof of the falsity of this opinion, the blood of the pulmonary veins is more decidedly venous than that of the pulmonary artery, whereas, if it become oxygenated in passing through the lungs, it should exhibit in the veins the scarlet hue. It is probable that the blood is sent to the placenta to be oxygenated. The arguments in support of this opinion are, the sudden death which follows

obstruction of the circulation through the umbilical cord, corresponding exactly to the phenomena which occur on the obstruction of respiration in extra uterine life. That this does not depend on bare cessation of the circulation, is evident when we reflect that the circulation in the body of the foetus is not obstructed by ligature of the cord, mechanically, but must depend on some impression upon the vital powers, by the abstraction of a property essential to life.

Another argument is found in the analogy of birds, in which the umbilical vessels are certainly inserviant to respiration, by receiving external air through the pores of the shell, for if the shell be varnished, respiration ceases, and the chick dies of suffocation.

It is probable that this sort of respiration of the foetus and the chick is very imperfect.

This is as we should have supposed.

The experiments of chemists have shown satisfactorily, that the great object of respiration is the generation of animal warmth, and the foetus being lodged in a cavity of the body, and removed from vicissitudes of temperature, would remain of a

temperature nearly or quite equal to that of the cavity in which it is enclosed. It would seem probable, therefore, since the amount of oxygen to be absorbed is in direct proportion to the degree of heat to be generated and maintained by the vital action, that a very small amount of oxygen only would be required under such circumstances, and this is probably the case, for it is asserted that the blood of the umbilical vein, although of a bright or warm than that of the arteries, is not possessed of the beautiful scarlet hue of highly oxygenated blood. After all this, it will be difficult to explain the mode in which this modification of the blood is effected in cases where no placenta and no umbilical cord exist. Is it possible, that the very small amount of oxygen which we have supposed might suffice for the life of the foetus, may be absorbed from the liquor amnii? or will it be found that the foetus in such cases has always formed a connection with some neighbouring part, from which it might either receive a small supply of blood, or of oxygen, transmitted by imbibition or

otherwise from the arterial blood circulating in the fœtus. By many it is believed that the liver even in adults is capable of performing a function vicarious to that of the lungs, and the great size of the organ in the fœtus, is supposed by some to favor the idea that it performs the function of decarbonization, as the bile is found to consist chiefly of carbon; but it found that this fluid is mostly absorbed again into the circulation, so that effete matters are not thus discharged from the body, unless it be claimed that the meconium consists of those matters which have been accumulating in the intestinal canal, but it can hardly be supposed that the quantity of this matter would warrant any such conclusions.

It is in accordance with every analogy, to find decarbonization of blood taking place in the same organ as the oxygenation, and as there is every reason to believe this latter change to be effected in the placenta, we have also strong reasons for believing its decarbonization to be effected there also.

With regard to the nourishment of the fœtus, more doubts are entertained. At first it derives nourish

ment from the albuminous matter of the ovum surrounding it, in the ovum of oviperous animals, for during its passage through the fallopian tubes, and after its arrival in the uterus, previous to its attachment by the placenta, no communication exists between it and the mother. After a time, it certainly derives its nourishment in some way or other from the parent, for its own small stock would be soon exhausted; in this respect the ova of mammiferous animals differ from those oviperous, which being hatched out of the body, contain sufficient nutriment for their full foetal developement.

By what medium then does the foetus thus derive its nourishment.

Since the times of Hippocrates, Aristotle and Galen, various physiologists have supposed, that the whole nourishment reaches the foetus through the umbilical vein, while others believe that it is derived either wholly or in part from the liquor amnii and other sources. Some of the most distinguished physiologists of the present day, deny that the nutrition of the foetus is effected solely by the blood of the umbilical vein.

Among these is Prof. Dunglison of Philadelphia, who says, that we have the most incontestable evidence that neither placenta nor cord is indispensably necessary for full fetal development, but only an absorbing surface, surrounded by a nutritive substance capable of being absorbed. This is proved by certain well attested cases of monstrosities, and by comparative physiology of some of the lower animals. The marsupial animals breed their young without either placenta or cord, the embryos being enclosed in one or more membranes which are not attached to the coats of the uterus, and are supplied with nutriment from the gelatinous substance by which they are surrounded.

So also cases are reported particularly by Dr. Good, of the birth of a living child, without funis or umbilicus. It is inferred from these considerations, that the foetus may be nourished from the liquor amnii, but cases are reported in which the foetus continued to live and grow, one or two months after the entire expulsion of the water. And although it may be true in these anomalous cases above referred to,

that the foetus might derive nourishment thus, still we may reasonably suppose that the same freak of nature that produced such monstrosities, might provide for their developement in an equally unnatural way, hence no certain inference can be drawn from them.

And in the cases of Dr Good with out a cord, it is still possible, that there might have been some unnatural relation or connection between parts, that would prevent these from becoming exceptions to the general rule.

A majority of writers maintain, that the foetus is nourished by blood furnished to it by the mother. But this is a disputed point. Is it real blood, or a peculiar secretion from the uterine vessels and absorbed by the foetal?

From what has been said of the doubt concerning the passage of vessels from the uterus to the foetus, of the difference between the blood of the two circulations and from the supposed physiological functions of the placental circulation the theory which seems best is accord with such facts as are certainly known and at the same time equally compatable

with the performance of these functions is the following. There direct vascular communication exists between the maternal and the foetal circulations; that about the end of the second month the vessels of the cord being formed, and the placenta developed, the nutritious substances which are to replenish the foetal blood are secreted by the uterine arteries, and absorbed by the radicles of the umbilical vein, while at the same time the effete matters must be thrown off from the umbilical arteries, and absorbed either by the uterine veins or lymphatics, and discharged from the circulation by the excretory organs. This supposes that no red globules are transmitted, but only the albumen or fibrine &c, from which the various tissues of the foetus are to be formed by the action of its own organs.

At the same time the change from venous to arterial blood must be effected in a manner similar to its performance in the lungs.

The next portion of the circulation claiming attention, is the hepatic.

Its general anatomy I have already noticed.

The ductus venosus is very much smaller than the umbilical vein, hence a great portion of the blood of that vein must pass through the liver before reaching the heart.

It is said by some that a portion of the umbilical blood passes directly through the sinus to the ductus venosus, without being commingled with the blood of the vena porta, and the situation of the orifice of the venous duct opposite to the termination of the umbilical vein, is referred to ~~to~~ show that the situation of parts is such, as to favor this idea. It is indeed favorable for the passage of blood into it from the sinus, let it come from what source it will.

But I cannot believe it possible to pass unmixed, for if this arrangement be imitated, by forcing fluids of different kinds into a common reservoir, by tubes inserted after the manner of these vessels, these fluids will be found thoroughly commixed as they pass out at the orifice corresponding to the ductus venosus, and we believe the motion and direction of the fluids in the former can

the latter case, to be governed by mechanical laws. Neither do I see any reason for making this provision here, for it certainly must become mingled with the venous blood of the hepatic and vena cava.

I have said a greater part of the umbilical blood is distributed to the liver by the vena portae. This distribution of vein and of venous blood to an organ is an anomaly common to the adult and the foetus, and it is now almost universally agreed, that venous blood furnishes the material for the hepatic secretion.

Notwithstanding, in the foetal state as we have just seen, the venous blood has a large admixture of arterial by the umbilical vein.

How is it with the adult? Does the liver receive arterial blood from any quarter, to take the place of the supply which ceases at birth?

Mr. Stevens, whose name I have already mentioned, in a series of papers published in the London Lancet, reported experiments made in order to ascertain the function of the spleen.

He has been led to believe, that the spleen is composed entirely of vessels, so arranged as allow the splenic artery to terminate in the vein by intervening capillaries, and that its only function is to transmit arterial blood to the liver for the purpose of aiding in its secretion. If this is true, we may infer that a certain amount of arterial blood is required for the biliary secretion, that this is furnished by the umbilical vein in the foetus, that on the closure of that vein it begins to be furnished by the spleen, which is still very small and imperfectly developed, transmitting ~~of~~ but a very small amount of blood, and if it were to send its full amount of blood at this time, this blood being black, or venous, would not subserve the purposes designed.

This interesting question is the subject of examination, and we can but believe, that it will not be abandoned, until light shall be thrown upon a subject, which has force been involved in a darkness that may be felt.

On reaching the liver, it is evident that there will be

a mixing of two columns of blood of very different degrees of oxygenation; for although the vena cava ascendens contains the venous blood of the inferior extremities, and of the portal circle, yet from its admixture with the umbilical blood, it contains the oxygen for the whole system.

The valve of the foramen ovale, is so situated as to afford proof, and the only authentic proof, that the course of the blood through that foramen is from right to left.

The canalis arteriosus is a great inosculating vessel between the pulmonary artery and the aorta, and carries to the latter vessel the blood which in extra uterine life, is sent to circulate through the pulmonary organs.

4. It is thought by most physiologists, that the current of blood entering the right auricle from the ascending cava, passes directly through the auricle, unmixed with that of the descending cava, passes through the foramen ovale to the left auricle and ventricle, and thence to the aorta, while the blood of the descending cava, passes directly to the right ventricle, and through the pulmonary

artery, a small part goes to the lungs, the remainder to the aorta through the canalis arteriosus.

This doctrine is supported by the anatomy of the parts. The arteries supplying the head and superior extremities, as well as the various parts concerned in deglutition respiration and so forth, are given off from the aorta above the termination of the arterial duct, so that these parts which are most perfectly developed at birth than the inferior extremities, will receive if this view of the circulation be correct, blood more highly arterialized than it would, if the blood of the cavae were completely mixed in the cavities of the heart.

Dr Wistar has also suggested, that without this distribution of the blood, the heart which needs a supply of revivified blood, would not be furnished with such as is fit for supporting the life of that organ.

A very ingenious theory differing from this is suggested by John Bell, who says, the object of the oval foramen and the arterial canal, is, to give to the aorta the pulsating power of both ventricles, for the pulmonary artery is larger in the foetus than

the aorta, and its course being very direct, it gives to the blood of the systemic circulation which is very extensive, the impulse of the right ventricle in addition to that of the left.

The opinion of Bell with regard to the ultimate design of the peculiarities of the foetal heart, is, I think highly plausible. He says.

Let it be remembered that every drop of blood that comes into the system is oxydated blood. One part of the blood indeed passes through the circulation of the liver before it reaches the heart, while another passes more directly through the umbilical vessels, but both are mixed, and the blood is all of one quality in the auricle, whence it begins its course to pass round the body. Now since the blood is all of one quality, Nature could have no cause for dividing it into two portions, one to pass through the lungs, the other over the body.

She could have no motive for employing as in the adult two hearts. The design of nature plainly is to prepare two hearts or rather a double heart, to be kept in reserve for the circulation

of the adult, but to use it as a single heart in the foetus. And see how simply this is accomplished. The two auricles communicate so freely by the foramen ovale, so that they are as one.

The two ventricles also deliver their contents into one vessel the aorta, and they are also as one. The blood arrives by the cavas, fills the right and at the same moment by the foramen the left, so that the auricles are as one, and filled by the same stroke, the two auricles act at once so that the two ventricles are filled by one stroke.

The foetus has then in the strictest sense but one heart – the heart of the body – and when the function of the lungs begins, then nature by the simplest mechanism, divides the two hearts, that each may perform its peculiar function. First, the flow of blood into the lungs deprives the ductus arteriosus of blood, and secondly this flow coming round to the left auricle, restores the balance, presses down the Eustachian valve, and makes the partition between the auricles entire, and when this is done it becomes a double heart,

With regard to this notion, I think it is too exclusive. I see no reason why all this may not happen even though the currents of blood remain more or less unmingled, as the former theory supposes.

In that case the heart mechanically considered would act as a single organ, imparting its force to the two columns of blood, as though it were of the same quality, the Eustachian valve being added to give it the proper direction.

The hypogastric which are the main branches of the internal iliacs, on arriving at the umbilicus, are loosely connected to the umbilical vein by cellular tissue, and usually winding spirally around it form the cord, and entering the placenta, they discharge their blood which is continually being replaced by that of the returning vein.

Such is ordinarily the anatomy of the foetal circulation, and such the changes taking place at birth. But anomalies are occasionally to be found, which are highly interesting, inasmuch as

they serve to confirm our opinions with regard to the physiology of these organs, and because they are frequently the cause of certain morbid symptoms, which it is desirable the practitioner should understand, although he will not often be able to relieve. The most important anomalies are found in the heart and great vessels, and are of various kinds. A common one is that which allows the the blood to pass from the right side of the heart to the left, without passing through the lungs. This is effected when the oval foramen remains open, or which amounts to much the same thing, when the circulation continues through the ductus arteriosus. In these cases although the structure is somewhat varied, the symptoms produced are very much alike, differing in different persons in degree only and not in kind.

The symptoms indicating this state of things are, blueness of the face and whole body, such as usually accompany suffocation, particularly evident under the nails of the fingers and toes, anxiety about the region of the heart, palpitation, difficult respi

ration, and sensations of great debility, all of which symptoms are aggravated by muscular exertion. These effects appear to be increased in proportion to the amount of venous blood received into the aortic system.

Life has existed in many instances for some time, with structure originally very different from that which has been described.

In engravings published by Dr. Baillie, relating to pathological anatomy, is a representation of a heart in which the venae cavae opened into the right auricle, and the pulmonary veins into the left auricle, as usual, but the aorta arose from the right ventricle, and the pulmonary artery from the left. The foramen ovale remained unclosed, and the canalis arteriosus continued pervious. In this case the aorta carried to the body only the venous blood which it received from the venae cavae, except the small quantity that found its way into it through the ductus arteriosus, while the pulmonary artery returned to the lungs the arterial blood, which came from them by

the pulmonary veins, together with the small quantity of venous blood that passed into the left auricle through the foramen ovale.

The subject of this malformation survived two months after birth.

A case somewhat similar to this, is related by the late Dr Mistar. In this case the Venae cavae terminated in the right auricle, and the pulmonary veins in the left, but the pulmonary artery rose as in the last case ~~rose~~ from the left ventricle, and the aorta from the right. There was no communication between these vessels by a canalis arteriosus, but a large opening existed in the septum between the auricles.

It is evident that in this case also the pulmonary artery must have returned to the lungs the arterial blood as it came from them, and the aorta must have carried back to the general system, the venous blood brought back to the heart by the cavae, excepting only that portion of the arterial and venous blood, as must have flowed reciprocally from one auricle into the other, and thus changed their respective

situations. This subject was two and a half years old. The heart was nearly double the natural size, and the foramen of the septum was eight or nine lines in diameter.

The pulmonary artery was larger in proportion than the aorta or the heart.

With this organization the child lived to the above age. His countenance was usually rather livid, and this color was always increased by the least irregularity of respiration.

His nails were always livid. He sometimes appeared placid but more frequently in distress. He never walked, and seldom if ever stood on his feet. He attained the size common to children of his age, and had generally a great appetite. For some weeks before his death his feet and legs were swelled.

It is probable that the protraction of life depended upon the mixture of blood in the two auricles, and they were really to be considered in this case as one cavity.

VIII.

Dissertation on Ophthalmia.

By

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Ophthalmia

In an article on diseases of the Eye, written by one who has to gather nearly all of his opinions from books you cannot expect any thing that is new or of importance to the profession — When that essay is narrowed down to mere inflammation of the different parts of the eye unless the nature of inflammation be discussed there can be but little more than a reference to the usual progress of inflammation on the tissues, and in doing that I write perhaps will be the greatest recommendation —

In active inflammation of the eye the Conjunctiva and Sclerotica are most frequently affected. The conjunctiva from its exposed situation and great sensibility, the Sclerotica generally from sympathy, or it may be the primary seat of the disease — The symptoms are known to all — Redness, an increased flow of tears, pain, intolerance of light, and a constant sensation of sand in the eye, are the most obvious — It is hardly necessary to mention the causes, for they are as various as the mechanical or chemical irritants

that can come in contact with the part, or as the pathological conditions that influence indirectly other sensitive structures — It makes but little difference in point of treatment, whether ordinary active ophthalmia begin from the eye having been interfered with mechanically, or have been caused by suppressed perspiration, after it has once begun, there is a progression of phenomena independent altogether of the temporary exciting cause —

The course of inflammation in the [illegible]g membrane of the lids and eyeball, is generally acute and as it is under the direct observation of the practitioner, he has perhaps, a better opportunity to arrest its violence here than inflammation in any other part of the body — The slightest irritation causes the blood vessels of the conjunctiva to swell, and this in a structure transparent and colourless gives timely warning to the attendant — As the irritation proceeds and the membranes become more thickened by the injection of their vessels, and as the engorgement takes place with that exalted heat which [illegible] that inflammation has begun, we find a tenderness

to rapid encroachment on the cornea. The conjunc-
tiva swells to its edge, and as the blood soon forces its
way into the contracted vessels of the part, it
moves on until it covers the whole of the cornea.
When symptoms run thus the whole of the
eyeball seems affected. Light becomes very painfu-
ful and there is danger of the irritation being
transferred permanently to deeper seated struc-
tures of the eye. In this stage the membranes may
easily be disorganized. Ulcers are likely to f
various parts, involving the whole tissues. The inner
surface of the lids are sometimes covered with fun-
goid elevations. Or the cornea may be pierced,
and the aqueous humour discharged, collapsing
the eye and leaving the patient blind.

The treatment in this kind of oph-
thalmia should be prompt; Antiphlogistics decid-
edly. Leeches around the lids in sufficient
numbers to cause a degree of faintness. Cold
applications, such as bread and water poultices,
constantly attended to. Saline cathartics often
repeated. Tartarate of antimony exhibited in

nauseating doses — Erect Position as near as possible — Seclusion from light, and low diet — This will in most cases speedily relieve the difficulty — Should the engorgement continue after the heat have abated and the soreness have passed away, except such as is produced by motion of the eye ball or lids, an application may be made to the inflamed membrane of such remedies as stimulate the vessels to contract and discharge their contents; a course which would be highly improper at the onset of the disease. The mineral astringents should be used, such as Alum, Sulphate of Zinc or acetate of lead, of the strength of gr iiij to the ℥j of water — Should these fail Nitrate of Silver, carefully applied in solution of about the same strength, by a camel hair pencil, often makes a prompt cure — If the lids are granulated, this solution should be of the strength of gr x to the ℥j —

When ulceration of the cornea has begun, the nitrate of Silver ought to be applied in substance touching with it the spot, or edges of the ulcer —

Some cases that have come under my notice threatening to perforate the cornea, have been cured in this way, and the smoky looking cicatrix that remained was gradually made transparent, and almost imperceptible, after a year or more.

When ophthalmia depends on constitutional irritation such as venereal virus, or any of the poisons that permanently disturb many of the tissues, constitutional remedies must be resorted to. We need not attempt to cure by local applications, when the cause continues that induced the disease in a membrane that was sound and able to resist diseased action compared with what it must be after disease have continued in it some time. In such cases we must place our principal reliance on such remedies as are recommended for the primary affection, and after that has been overcome, local treatment may be attempted with a better prospect of success.

The different names that are given to the varying symptoms of ophthalmia

such as Lachrymose, Purulent, Glutinous, Everted Eyelid, Inverted Eyelid &c, are but degrees of inflammation of the structures of which I have been treating - The change of secretion from excess of common tears to half formed pus, and the mechanical operation of shortening or thickening membrane as by inflammation and altering the position of the eye lids, are all easily understood as part of one pathological state - In these cases the practice must be varied to suit the active or chronic condition, and the amount of attention to the case proportioned to its violence and the danger of disorganization of structure -

Two or three cases have come under my notice, which show the progress of external inflammation of the eye and the effect of treatment -

A machinist, an Englishman of middle age, and of sanguine temperament, and of temperate habits, had a fragment of iron forced against the cornea of the left eye, which cut it entirely through about one half its upper diameter, infringing a little about half a line upon the sclerotica - The

greater portion of the aqueous humour was discharged, and a portion of the iris apparently lacerated protruded from the wound. The Physicians who first saw the patient, had lead water applied to the eye, and a dose of Epsom salts administered. The Physician who afterwards took charge of the case found the eye very painful. He substituted bread and water poultices, and had it constantly renewed as often as evaporation brought the least hardness on. In the administered, all the while, tartarate of antimony in small doses of about half a grain every fourth hour, more or less, so as to keep up a constant nausea. Thus by these two indications, one allaying local irritation, and the other reducing inflammatory action in the system generally, the inflammation of the eye was kept down to that healthful point which w[illegible] resulted in a rapid healing of the part. The edges of the cornea united, as the iris was gradually withdrawn by the humours again filling the anterior chamber of the eye. The cicatrix which was at first quite vascular, gradually lost its distended

vessels, until, in a short time, about four months from the time of the accident it seemed but a pearl coloured semitransparent streak, marking the position of the wound.

A healthy lad, about fifteen years old, was attacked, after exposure to rain with a violent pain in the eye balls, attended by great redness of the sclerotica, and swelling of the conjunctiva. The aqueous humour became suddenly milky, so that the iris could be distinguished with difficulty, sight was so far lost, that the mere outline of bodies opposed to the light could be determined. From the violence of the symptoms, fears were entertained of total and permanent loss of sight. Saline purgatives were freely administered at once, and cold applications were made, after about twelve leeches had been applied around each eye. Tartarized antimony was given in nauseating doses, from which the patient was not relieved until the inflammatory symptoms began to abate, a rapid disappearance of the cloudiness of the humour soon followed, and in about a week the patient was well

A man of middle age, strong eyes, good health but intemperate habits, became affected with ophthalmia that involved principally the conjunctiva — A Physician was called who recommended Epsom salts to be taken frequently, and a wash of vinegar and water for the eyes — There was nothing very formidable in the symptoms, as they were narrated by those who were with him when he was attacked, and one would so infer from the character of the treatment recommended, as no leeching nor any kinds of active depletory remedies were used — In the course of three weeks the cornea of each eye had become widely ulcerated and portions of the iris were protruding — in one eye through two openings, in the other through one — of larger dimentions — Light was lost except that faint vision that can detect only an object — sing before the light — In fact the difference between day and night was merely perceptible — In this case nothing was to be done except to relieve from pain, and arrest as far as possible, further disorganization of the eyes — The patient was irrecoverably blind — The iris had

become involved, with the diseased cornea – They could not be seperated by pressure – All the anterior portions of the eyes were blended in a confused mass of newly arranged tissue –

On inquiring of the patient what was the effect of the vinegar to his eyes, he said "it smarted very much every time he used it and made the eyes feel raw as if the skin was off" – Here treatment that might have been beneficial in the latter stages of the disease, increased the inflammation and thus destroyed the eyes of the patient –

Tartarate of of antimony, solution of nitrate of silver to the ulcerated edges of the cornea relieved the patient from much of his suffering and the eyes are now shrinking away as a loss of their humours into less painful but [illegible] blindness –

A Grocer a man of full habit, temperate in his living had an ulcer that followed inflammation of the conjunctiva – It was nearly in the axis of vision and the size of a pin head – There was but little pain except on exposure to light – The vessels running to the

parts were considerably enlarged and the diseased part seemed to be spreading. Leeches and Tartrate of Antimony had been resorted to arrest the active inflammatory symptoms. Nitrate of Silver was now applied in substance every day for more than a week. The progress of the disease was checked, the vessels diminished, the pain left the eye on exposure to light, & became well except the small blur on the cornea which showed the seat of the ulcer. This has been gradually disappearing and now nearly a year from the time of the disease, it is almost imperceptable.

It is unnecessary to mention more cases all go to prove that inflammation of the tissues of the eye are to be treated upon the principles that regulate us in treating inflammation generally, arresting it when active, by withholding irritants. When chronic, inducing those actions which are consistant with a removal of obstructions, and a healthy performance of the functions.

Wm. H. Russell

IX.

Dissertation on Necrosis

By

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Necrosis.

This term signifies the death of bones and is derived from the Greek νεκρω, to destroy, and is similar to mortification of the soft parts.

This disease was not distinguished by the ancients from Caries, although the two affections are essentially different. In the one, the bone is entirely deprived of its vitality, in the other its texture is altered, and its nutrition impaired, without its vitality being destroyed. The one is analagous to mortification of the soft parts, the other to ulceration.

This disease most frequently affects the long bones, and of these the tibia is by far the most liable to be attacked. Persons under the age of puberty, and of a strumous constitution, are the most frequent subjects of necrosis.

The compact substance of the bone, where the vital principle is less energetic, and more easily destroyed, is oftener the seat of this disease, than the spongy substance, which is more vascular.

The extremities of a bone often remain unaffected, when the body or middle is destroyed, the disease being confined to its centre of ossification.

Authors have divided this disease into two varieties, and three different stages. Simple, when confined to one bone, and the patient is, in other respects healthy. Compound, when several different parts of the same bone, or several distinct bones, are affected at the same time; or when the patient is suffering from some other complaint. The first stage, embraces the period during which the destruction of the bone is effected, the second, includes the process of exfoliation, the third, is the period in which the separation of the dead portion is completed.

Necrosis may arise from a variety of causes. An interruption in the nutrition of the periosteum or the bone itself, may be regarded as a primary cause. Some of the causes are external, while others are internal or constitutional. Sometimes, the life of the bone is instantaneously destroyed, at others,

preceded by inflammation. The external causes which injure the periosteum and medullary structure and thus produce Necrosis are, Wounds, fractures, Contusions &c. exposure to heat and Cold, Combined with moisture, or the body being suddenly chilled when in a perspiration. In most cases an internal Necrosis proceeds from Constitutional Causes, though an external Cause may extend its action to the interior, and so affect the medullary membrane, as to produce the disease. Those Causes of a Constitutional Character, are, Scrofula, Scurvy, Syphilis &c. In some Cases the disease cannot be traced to any particular Cause.

The Commencement and progress of Necrosis is extremely deceptive. In a common case following exposure, in the course of eight or twelve hours, a severe pain is felt in the leg below the knee. Upon examination no alteration is found in the appearance of the part, there is no tenderness on pressure, nor any swelling, thus

inducing a belief that it is simple a rheumatic affection. If the disease is seated in the tibia, the pain is not felt at first at the place of inflammation, but the ankle or knee joint is complained of. A difficulty is thus presented in the diagnosis, and young practitioners are particularly apt to be deceived.

In order to form a correct judgement, it is of the first importance to enquire into all the symptoms, by which we may be enabled, not only to ascertain the presence of the disease, but its modification also. We should endeavor to acquaint ourselves with every thing which may have predisposed to the disease; whether the patient has met with any accident, and if so, what symptoms supervened. Whether the patient has been subject to scrofula or syphilis, and what treatment may have been adopted, for in some cases, injudicious remedies may cause the disease.

The kind of inflammation with which the patient is affected, may serve as a guide in forming a diagnosis. The inflammation in this disease is generally slow

in its progress, and the attendant symptoms severe.

For the first twenty four hours, there is no change in the skin; its natural color is retained, but after this period, it presents a livid and shining appearance.

This disease has been confounded with other morbid affections of the bones, but if attention be paid to the discriminating circumstances, such errors may be avoided. In other affections of the bones there is not that peculiar and severe pain in the commencement, followed by discoloration of the skin; and the swelling in Necrosis is not circumscribed. These with other circumstances are sufficiently obvious, to guide the surgeon in his diagnosis.

It is a matter of great satisfaction to the surgeon to be aware, that although the disease is always serious and painful, it is not of a dangerous character. I believe that it is now a well authenticated fact, that it never affects a

pial essential to the preservation of life.

The disease in the superior extremities, is always without danger, and is seldom fatal in the lower extremities. When the stage of inflammation is very violent, and rapidly succeeded by the other stage, the case is more severe and dangerous.

The excessive pain, extensive irritation, and copious discharge of matter, preceding the reproduction of bone, soon induce hectic fever, and the patient is sometimes so far reduced, as to be unable to conflict with the severity of the complaint; but even in such cases, where every thing appears so unfavorable, amputation may be resorted to, and the patient's life probably saved.

If the patient possesses sufficient strength, to pass through the incipient stage, a favorable issue may be expected, for there is no particular danger during the formation of new bone. There is generally an increase of the pain and distress, when the constitution becomes loose, and endeavors to

force its way to the surface, and often a high de-
-gree of irritation succeeds, with ulcerations of an
unhealthy appearance, followed by violent fever,
and the patient sometimes is placed in consid-
-erable danger, from this source. If he is able
to resist the severity of the disease, the sequestra
are cicted, and a cure effected. In this case,
we may be enabled to judge of the danger to
which the patient is exposed, from the effect
which the disease produces upon the general
health.

As an illustration of necrosis, I
cannot do better, than relate my own case.
Upon rising in the morning, I detected a dull,
wandering, deep seated pain, apparently occupy-
-ing the whole length of the bone. By pressure
upon the limb, this pain appeared to be relieve-
-ed in a great measure. I found that when I
walked, I was obliged to limp considerably.
As the inflammation increased, the sensibility

of the parts became much greater. Neither the size nor the shape of the limb was altered for some time, nor was there any change in the appearance of the skin. In a short time the pain increased, so as to become almost insupportable, and decisive symptoms of inflammation made their appearance; there was great tenderness on pressure, increase in the size of the limb, which enlargement could be traced along the course of the tibia. With the increase of the swelling and pain, there was great nervousness, sleeplessness, and increased activity of the pulse. At this stage of the disease there is generally delirium.

The diffusion of swelling varies in proportion to the depth of the diseased bone from the soft parts; if the bone is deeply seated, the swelling may involve the whole limb.

The tumefaction and tenderness increased, as also did the pain and restlessness, and was only relieved by an incision down to the bone, thus giving vent to a vast collection of matter. There is

generally no diminution in the severity of the symp-
-toms, until an opening is formed, for the pus is
bound down by the periosteum and firm fascia.

When the inflammation is acute, purulent
matter of a good quality is formed, and the abscess
soon bursts; but in chronic cases, the pus forms
slowly, and is thinner and less healthy. In these
cases, when the bone is deeply situated, the quantity of mat-
-ter gradually increases, enlarging the cavity, and the cel-
-lular substance yields, different sinuses are formed, ex-
-tending a great distance from the seat of disease.
The discharge of purulent matter is always very great,
and after a time the sinuses receive the name of fis-
-tulæ, and though rarely preventing an entire cure, show great indisposition to heal. These fistulæ vary
according to the extent and severity of the disease; some-
-times extending over the whole surface of the limb.
At this stage, small spicula of bone, are cleared away
through the external openings, along with the purul-
-ent matter. This was the case with me; they pass-

-ed out without causing any irritation, or giving any pre-
-vious intimation of their approach.

As long as the patient's general health remains good, the discharge from the ulcers is white and laudable, but degenerates according as the health is impaired.

After the formation of these external openings, it is important for the surgeon to ascertain the extent of the disease of the bone; whether the dead portion is detached, and whether it is a superficial portion of the bone.

If the openings are sufficiently large, the necessary examinations may be made by the finger, and if not, a probe may be used, by which means the surgeon can generally satisfy himself in regard to this point.

Internal necrosis differs in some respects from the form just described; it is generally more severe, and of longer duration. The symptoms in the first stage, are more dangerous than in the other cases; the pain is of the severest kind, the fever very high; continued loss of rest, profuse perspirations, all of which tend to prostrate the system. The swelling

increases slowly, and the pain which is felt in the bone is not augmented, by handling the parts roughly; the swelling does not decrease, by the evacuation of matter, as in the external disease, and by pressure upon the part, the quantity of the discharge is not increased.

When we have this combination of symptoms, and find the limb unable to bear the action of the muscles, or the weight of the body, and that its shape becomes altered, we may conclude that it is a case of internal necrosis.

We may be enabled to judge of the extent of the disease, by passing a probe through the openings in the incrustant bone, and measuring the distance between them, as the sequestra can generally be felt through them.

There are two distinct terminations to necrosis, which are described particularly by Russell. In the one, the mildest and most desirable termination, the ulcerations gradually heal up without exhibiting any unusual appearance.

The sequestrum is never seen; the patient soon re-
-gains his health, and no vestige of the disease re-
-mains. The other termination, is attended with
more painful and interesting symptoms, the seques-
-trum forming a conspicuous scene. It appears ex-
-ternally, by forcing a passage for itself, through the
new formed bone, and common integuments. Some-
-times this happens, without being preceded by any
considerable suppuration, and the degree of pain and
inflammation is inconsiderable. The case however is
different, when the protrusion of the bone is preceed-
-ed by profuse suppuration; for then the pain is
often very great, and does not cease until a natu-
-ral or artificial opening of the abscess has conve-
-ed the tension and irritation.

The extremity of the sequestrum, at the time of its
protrusion is always rough, irregular and sharp, but
is generally firmly wedged in the neighboring parts,
so that it cannot be extracted until it becomes loo-
-se in consequence of the consumption of a part

of its own substance, and partly from the wasting of the new formed osseous shell, by pressure. In other cases, a part of the middle portion of the seques-trum presents; the new shell of bone incloses it on every side, thus preventing the motion of the seques-trum, except in the direction of the cavity. It is difficult to say, what would be the final result of such a case, if left to itself; since the assistance of art, is so highly necessary to complete the cure, so that the conclusion of the case is never left to the spontan-eous efforts of nature.

In the early stages of necrosis, the vascular surface of the new osseous shell, sends out granula-tions from every part of its surface, which rise in all directions, and grow rapidly, gradually diminishing the size of the cavity, left by the removal of the dead portion of bone. At last they unite together and form one solid mass which entirely obliterates the cavity. Thus in cases of the removal of the seques-tra, whether by absorption or ejection, the substitute

bone becomes solid instead of hollow. The slow ejection of the sequestrum indicates a moderate degree of inflammation, but where it separates more quickly, and while the new bone is in a soft state, the inflammation is severe, accompanied with violent symptoms, and with the temporary suspension of the motion of the limb. This, in natural separation is of more frequent occurrence in the thigh bone. Sometimes the sequestrum separates from the old bone at both its extremities, at an early period of the disease, and the patient loses the use of the limb for the time being.

In that form of necrosis, where the sequestrum is removed by dissolution and absorption without separating entirely, the disease is more uniform in its progress. The process is necessarily tedious, and accompanied with a profuse discharge of matter; but besides the general enlargement of the bone, this is the only striking circumstance which occurs. In young subjects, the dissolution

takes place more speedily than in those of more ma-
-ture age. The sequestrum being separated from
its attachment, probably owes its decay to the spon-
-taneous decomposition which all parts of the body
naturally undergo, when they are deprived of life, and
detached from the system, aided by the solvent pow-
-er of the purulent matter which surrounds it.
This constant maceration facilitates the sponta-
-neous decomposition of the detached bone, and pre-
-pares it to be removed by absorption, or to be washed
out along with the discharge.

This termination by absorption is
denied by Liston. He remarks, that a small por-
-tion of bone in the central part of a bone dies, and
violent inflammation of the whole bone is the con-
-sequence, even though the exciting cause be slight.
This inflammatory action continues for a long
time, and either the small portion of dead bone
is discharged unnoticed with the pus, or it becomes
encased, and ultimately lies dormant in the cen-

-tre of the bone. The external opening then heals, and the case is supposed to be one, in which the dead bone has been absorbed. He says, there is no such thing as any absorption of bone after once it has become dead. In order to prove his assertion he mentions an instance, of a sequestrum composed of nearly the whole internal shell of the humerus, the upper part of which presented just under the shoulder; and as all of it could not be extracted, he removed as much as he could reach with the cutting forceps. The opening now closed, and the sequestrum remained for a long time bathed in the pus which filled up the medullary canal, whilst the process of absorption was slowly going on in the neighbouring living bone. At length when separation had taken place sufficient to allow the sequestrum to be moved about, a fresh incision was made over the shoulder, and the whole of the sequestrum removed, which appeared sound and had apparently corroded edges, except at the

upper part, where the bone forceps was applied, which was smooth and sharp, as when it was first cut through, clearly showing that no absorption had been going on in the actually dead bone, though it had been proceeding in the living bone in close contact with it. He also mentions several experiments made by himself and others. Small smooth pieces of bone, previously weighed, were introduced and kept in issues, instead of peas or other foreign bodies.

Pieces of bone were also introduced into the medullary cavities of the long bones of rabbits and other animals, and after ten [illegible] in the [illegible] for several weeks, the animal was killed, and the state of parts examined. The bone which had been introduced, was never in the slightest degree eroded, nor was there any diminution in its weight. In some cases, the dead pieces of bone were observed cemented to the sides of the medullary cavity by new osseous matter the own

out by the living bone. This appears to be the opinion of the surgeons of the present day.

The duration of a case of Necrosis will vary a great deal, depending upon the age and vigor of the patient, on the size of the bone diseased, and the action of the bloodvessels of the part. The younger the patient is, the more expeditious the process, as the bones are of smaller size, and are possessed of more vascularity. The lower jaw, generally occupies less time, than other bones, and the tibia is the most tedious.

Taking a case of the disease in the tibia, from the commencement of the pain, till the final termination of the case, when all the ulcerations have dried up, and the new bone become consolidated, generally occupies at least twelve months, very often a longer period. In my own case, it was several years. In cases of long duration the patient's health is not impaired, in any proportion to the alarming appearance of the

symptoms. The duration of a case, admits of considerable latitude, even in patients of the same age, and when the same bones are affected.

It is of the utmost importance, that the surgeon should appreciate the powers of nature in the cure of necrosis; he should endeavor to aid her in her salutary efforts and not interfere by unnecessary medication or operations; but if he should find her unable to accomplish a cure, he should not hesitate to interpose his aid, for the safety of the patient.

Nature displays the power of reproduction more remarkably in this disease, than in any other. The formation of new parts is so rapid and wonderful, that we might be inclined to doubt its reality, were it not that we are presented with numerous examples of the fact.

After the entire bone is the original one, the formation of a substitute one, enables the patient to perform

all the usual actions of the limb without some in-
-convenience or difficulty; and in favorable cases, the
power of motion is preserved during all the changes
which occur. We can thus infer that the new
bone must have begun to grow, and have acquired
firmness, before the separation of the old bone, oth-
-erwise the patient would be unable to use his limb
during all this period. Another consequence of the
formation of new bone, anticipating the separation
of the old, is that the new bone should surround
and include the old one. The dead portion com-
-pletely occupies the space between the two living ex-
-tremities, and the new bone can only attach itself
to the live portions, by passing over it; and from
this fact, we know that the new bone must be
larger than the old. Upon this account the affect-
-ed limb will be larger, and out of proportion to
the other limb, having also a rough irregular surface.

This process of reproduction is more frequent and
complete in the long than in the flat bones.

To what organ is to be ascribed the function of reproducing bones? By many the whole work is conceded to the periosteum; this was the o-
-pinion of Mr. Du Hamel, of Paris and others. This opinion is adopted by Dr. Gibson. Others contend that it springs from the substance of the old bone. Liston states that the formation of the substitute bone proceeds from those extreme points of the old bone, which retain their vitality, and takes place under the thickened and swollen periosteum; for the bony tissue alone seems to have the power of assimilation, as it were, and of causing the deposition on its surface of new osseous matter.

Russell states, that the pulpy mass which extends from one portion of the bone, to the other, and is itself at first connected with both, is called a new medium, and has a dependence upon the original bone, as its parent.

That however, the periosteum is the organ of re-
-production, is now the general opinion of surgeons.

experiments having frequently been made, showing that there was a reproduction, though nothing was left of the old bone except the periosteum.

If at different periods of development, the new bone be examined, we perceive at first a reddish fluid, thin and small in quantity, which gradually increases, until it becomes a gelatinous substance; in this, bony fibres are developed, which become more and more numerous, until they form layers and cells, extending in every direction; so that, at length all the fluid disappears, and the new bone takes its place, gradually becoming denser and harder, until it acquires the ordinary consistency and color of bones.

When a portion of bone dies, nature uses all her endeavors, to bring about its separation from that part which still remains alive. This separation is effected more rapidly in youth, when the bones are possessed of less earthy matter, than in old age. The smaller the portion to be detached, the quicker will the process be finished.

This separation takes place sooner in bones of a light texture, than in those of a solid structure. There has been great diversity of opinion, in regard to the means employed by nature, in effecting this separation. If we take the opinion of Hippocrates, and of others of the old physicians, that the dead part was pushed away, by means of a fleshy substance which grew underneath; while others believed that the dead part was forced away, by the incessant beating of the arteries. Modern theories teach, that the dead portion of bone is separated by the process of absorption, precisely in the same manner that mortified parts, are separated from the living, in cutaneous, muscular, and other structures: the part of the living bone in immediate contact with the dead portion is absorbed by the proper vessels, and the sequestrum is ultimately left free.

We are now led to consider under what circumstances, the intervention of the

ant of Surgery is necessary and proper, in cases of Ne-
-crosis. In the cure of this disease too little credit is
given to the efforts of Nature, and successes are of-
-ten boasted of which properly belong to her; in fact
in many cases double honor is due her, for she
has to contend, not only against the disease, but
also against the baneful influence of injurious
treatment. If credit is to be given in all cases
recorded, to the power of medicine, we have a mul-
-titude of wonderful cures, performed by every possi-
-ble mode of treatment; by balsams, cold water, steam,
vapor, and other modes of application of warm water,
acids, caustics &c. There is much reason to ques-
-tion, whether any real benefit can be derived from
the use of topical applications. It is true, the
disease commences with inflammation, but this
inflammation is of a peculiar kind, being always
so deep seated and severe, that it is extremely diffi-
-cult to control it in local treatment. Still it is
our duty to endeavor to alleviate the sufferings of the

patient [illegible] in [illegible], and a trial of the usual means of counteracting inflammation should be made, as topical blood letting, cooling applications &c. A variety of remedies have been proposed, to accelerate the process of the separation of the bone, but they generally do more harm than good.

Acrid substances have been recommended for this purpose, to be placed upon the dead portion of the bone, but they can only prove irritating, inflaming and destroying the surrounding parts, and causing a great deal of pain to the patient. The actual cautery, gouging instruments &c. are very apt to cause new inflammation, and increase the sufferings of the patient. The internal remedies which have been so much lauded in necrosis, as sarsaparilla, hemlock &c. do good probably by their tonic and alterative powers, enabling the patient to bear the disease better than he otherwise would.

The preparations of iodine, in their internal and external use, may accelerate the separation of dead bone, by increasing the activity of the absorbents; and

hence their utility in some cases.

In the commencement of the disease, when the inflammation and fever is intense, we should endeavor to palliate the severity of the case by immediate, antiphlogistic remedies, and venesection, not for one bleed to any great extent, as the patient has to contend with a severe disease of long duration. When the secondary arises from syphilis, &c. the remedies calculated for the cure of these diseases, should be used; the preparations of Mercury, Iodine &c. Narcotics should be given in all varieties of the disease to relieve pain and to subdue nervousness. When these methods of treatment fail, recourse may be had to incisions. The inflammation is deep seated, and covered by unyielding tissues, which prevents the swelling of parts, and causes excessive pain; the object of the incision is to free parts from this pressure, not to give exit to matter. The duration of the disease is often shortened by this practice. The incision should be made down to the parts affected, and if matter has

collected, it is discharged, and it often happens that the disease is prevented from extending. If when this incision is made, the bone is found altered in color, and the pain is not relieved thereby, it is probable that the inflammation is deeper, in the cavity of the bone. An incision is then to be made through the bone by the trephine, cutting a portion entirely out. An alteration will be found in the cavity, it may be filled with a bloody serum, or a false joint may be formed; the matter must find its way to the surface, before restoration can take place. This treatment is of recent date, but has the sanction of very high authorities.

When loose fragments of bone protrude, it is the duty of the surgeon to remove them, as they are a source of irritation, and prevent the healing of the ulcer in the joint; but he should be careful to ascertain that they are detached, as it would be injurious to pull them away by force. The fragments can be removed by the forceps, or the finger,

if sufficiently protruded; and if the external opening is too narrow, it may be enlarged. In some cases there is more difficulty, the sequestrum being included in a cavity of the new bone.

When we have discovered for certain, that the bone is loose, by means of the probe, we are warranted in cutting down for the purpose of removing it. This operation is generally well borne, and when the removal of the diseased portion, the ulcers generally heal, the health is restablished, and the functions restored. The surgeon should endeavor to ascertain satisfactorily, the presence of the dead portion, and to assure himself that it is loosened from its attachment, previous to the operation. If possible, it is better to operate as soon as the sequestrum is loose, as the new bone is then so soft that it can be cut with a knife, and thus the operation may be materially shortened. An incision is to be made down to the bone containing the sequestrum. In dividing the

soft parts, there is generally considerable hemorrhage, as the tissues are condensed, and the bloodvessels cannot easily retract. If the canals in the new bone, are too small to admit of the removal of the sequestrum, they may be enlarged by means of Hey's saw, or other instruments. If there are no apertures in the new bone, an opening may be made by the trephine. When this is accomplished, the surgeon must take hold of the dead bone with a pair of strong forceps and extract it; it is not necessary to remove every particle, as a cure will follow.

In some cases, where the bone is hard and thick, the gouge and mallet is resorted to. This operation was far more much more in vogue, than at the present day. It is still the favorite operation of some surgeons. I witnessed one operation of this nature, performed by Prof. Horner, at the Clinic of the University of Penn.a, in October last, which proved successful. Generally, relief can be afforded, by a resort to milder measures.

After the removal of the sequestrum; if the new bone is not strong enough to support the patient, the limb may be placed in splints; but this is seldom required. Cases occur in which amputation affords the only chance of saving the patient's life; as for instance, when the cavities containing the sequestra, extend to the neighbouring joints, and cases where from a large number of dead portions occupy separate cavities, causing great irritation and distress. I saw this operation performed by Mr. Knight of this Institution, upon Mr. P. of West Haven, in the spring of 1846. The patient had been suffering from Necrosis of the Tibia, for a number of years, and his limb was useless. The limb was removed a short distance above the Knee, and the operation proved completely successful. Upon examination the whole Tibia was found to be diseased, and the knee joint was involved.

When Necrosis is complicated with some other

distance in its vicinity, or when the patient's strength is so much exhausted that it will not be able to withstand with safety a radical cure of the disease, amputation is recommended should not be delayed.

X.

Dissertation on Scarlatina.

By

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Scarlatina. — Scarlet Fever.

This, according to Medical writers, appears to be a disease of modern times. The first correct diagnosis of the disease was made about the year 1793. Dr. Clark gave a description of it as it prevailed in New-Castle upon Tyne, England, in 1778. It seemed to have reached western Europe from the East, during the last century. The early medical writings seem not to have particularly described it, having confounded it with Small Pox & Measles. It is mentioned as having prevailed in Edinburgh, as early as 1734. It is mentioned as having prevailed in some places in America, as early as 1774; but in 1792, the disease appeared in this country, & for many years afterward, it prevailed extensively over the land. It has been common in New England, for the last fifteen years.

The disease first comes on with paleness & depression of spirits; chills; often vomiting, with weak rapid pulse. After a few hours reaction takes place, a fine scarlet rash appears about the epigastrium, & extending over the whole body; the accompanying fever is slight, or severe, according to the violence of the case. I shall follow the course laid down by late medical writers, & describe the disease under the four following varieties, viz:

1. Scarlatina Simplex.
2. Scarlatina Anginosa.
3. Scarlatina Maligna.
4. Scarlatina sine Exanthema.

In Scarlatina simplex, the disease is clearly marked; the rash not severe, & the accompanying fever slight. It declines about the fourth day, leaving the patient nearly well, except bodily weakness.

In Scarlatina Anginosa the morbid virus is directed to the fauces, as well as the skin; the accompanying fever more severe.

The tongue assumes a high red color, the papilla are elongated, & protrude through the coat of fur; the muscles of the neck and lower jaw are stiffened; the throat becomes excoriated, whitish sloughs appear on the tonsils, which are swollen; a viscid mucous fills the mouth, & deglutition is painful or performed with difficulty. This is the common course. But in some cases, it runs higher, & is alarmingly dangerous. The eruption appears severe, pulse small, indistinct, & irregular; heavy coma, or wild delirium, with deafness; ulcerations of the throat, deep, & broad, covered with dark instead of whitish sloughs;— the tongue is lined with a black, chappy crust & tender to the touch; breath fetid; the rash severe from the commencement, assumes a purplish or mahogany colored hue, with patches of ghastly paleness, & death closes the scene, on the fourth or fifth day, the patient seeming to die, by the skin losing its functions, like one scalded.

In this variety, the rash runs sometimes to run its proper course & terminate favorably, yet the fauces are the seat of considerable danger; the ulcerations spread over the surface; the powers of life sink; the patient sustains a feeble existence for several days, & dies at last.

In Scarlatina Maligna, the symptoms in the commencement, differ but little from the anginose variety. The fever assumes a typhoid form, heat of skin less intense, great disorder of the function of the sensorium, with small frequent irregular pulse; sometimes a dull redness of the eyes, a dark red flush on the cheeks, restlessness, low muttering, & sometimes violent delirium; the tongue, dry, red, & glazed, teeth & lips covered with sordes, & the breath offensive; the throat has a dusky red appearance, not much swelling, but dark incrustations form, which appear to be exudations of lymph, or false membranes, there is often an excoriating discharge from the nostrils, & a viscid secretion

from the fauces, impeding respiration, & producing a rattling noise. In some cases, the inflammation spreads to the posterior pharynx, which it makes so irritable, than on an attempt to swallow, fluids are rejected through the nostrils. The rash is irregular as to appearance and duration, coming out sometimes late in the disease, & disappearing in a few hours; coming out & going off several times in the course of the disease, its color is paler than the other varieties, except near the termination, when it assumes a darker hue. The peculiar poison which occasions scarlet fever, sometimes gives rise to congestions at first, so that life is overpowered at the onset. This is a rare form, but such cases have occurred in practice. I have seen several cases in which convulsions, powerful & lasting, appeared to usher in the disease. In the congestive form, the reaction is imperfect; with a strong tendency to collapse, with its concomitant symptoms. If reaction takes place it is mortal,

& the patient suddenly sinks. In this form of the disease, the stomach will not vomit. In Scarlet fever without eruption, we have all the characteristics of the disease without the rash. It seems to expend itself on the fauces, & other mucous membranes. It occurs occasionally when the disease prevails epidemically. This has been thought to occur only with adults, but I have seen it in several cases of children. The disease commonly arrives at its height in four days, sometimes later. Persons do have the disease the second time, several cases I have witnessed, two in one family who recovered. Two other cases who died with the second attack. When the disease prevails epidemically sore throats are common among all ages & classes. It acts on the same principle as other like diseases, being I believe both contagious & infectious. Contagious, by its rapid spread in Schools, Factories & other like crowded places. Infectious, by its having been produced by inoculation. The force of the contagion to those exposed operates

from 5 to 25 days, the mean time according to my observation is about fourteen days.
The only disease with which scarlet fever may be confounded, are Measles & Rosola.
From Measles, by the difference in the attack, & the complexion of the eruption; measles bring more of the dusky hue, & the premonitory symptoms, a severe catarrh. From Rosola, by the shortness of its duration, & absence of inflammation in the fauces, the accompanying fever being mild.
If the symptoms are regular, the case is favorable; if irregular, with feebleness of the vital forces, & a tendency to congestions, unfavorable. If the eruption changes its character, or the affection of the throat runs down, forming croup, or bronchitis; the case is also unfavorable. The disease has a strong tendency to the brain - kidneys - primæ viæ - & all the great cavities, especially the fauces. It always runs a definite course.

From what has been said, it will be seen that each variety will require a treatment suited to itself. In mild simple cases there is not much to be done. We must endeavor to support the integrity of the constitution. Give emetics of Ipecacuanha early in the disease; & follow them by mild laxatives. Bloodletting is to be used with great caution. Give mild diaphoretics, as the compound powder of Ipecac; or the Acetate of Ammonia. Sponging the surface with tepid water. Cold bathing, or affusion, to be used only in cases of high external heat, when it is indispensable; care being taken, to have it managed so as to get a fine state of the circulation afterwards, by laying the patient between warm & well aired blankets. When the skin loses its functions, the vapor bath is often serviceable. — In the Anginose variety the throat is to be attended to as well as the skin. In addition to the treatment before named, use acid and astringent gargles. Cayenne pepper is good.

Gargles seem to do good, by clearing the throat of viscid mucus. If the inflammatory symptoms run high, bleeding from the arm may be useful; but I have found local bleeding, by cups & leeches, preferable. Equalize the animal heat, by applying bottles of hot water to the extremities, & rubefacients to the surface of the body. Give laxatives, as a little Calomel & Rhubarb, followed by Castor Oil, or the Compound Infusion of Senna; allow a spare unirritating diet, rest, free ventilated apartments, & free from noise. In the after part of the disease, a more generous diet may be allowed, stimulus may be necessary; but its effects must be carefully watched; for, from a sudden exposure to cold, cramming too early, over exertion, or neglect of the bowels, the patient is apt to have dropsy. In cases where the rash is irregular, I have seen the Chloride of Soda do good. Chloric Ether, and Carbonate of Ammonia, often do good, by stimulating the nervous system, & thereby equalizing the excitement.

In congestions where in by collapse, use stimulants & rubefacients to get up action. apply a large blister or sinapism over the epigastrium. After reaction is established give an Emetic tobe followed up by a purge of Calomel. The utility of purgatives in these cases is sufficiently proved by high authority. I have seen them appear to do much good. Should reaction be violent, prefer to take blood by cups and leeches, rather than by general bloodletting. Give Opium Calomel, & Opiate, every hour or two, & aim at their alterative effects. Secreting glands are to be treated by fomentations & anodyne poultices. & if painful, by the use of Opium internally. In ulcerations of the fauces, detergent gargles are useful, such as the Infusion of Cinchona with Muriatic acid — Compound Infusion of Capsicum — Sulphate of Quinine — Nitrous Spirits of Ether — Burnt Alum used largely, covering the whole fauces with the powder — Solution of Nitrate of Silver — Sweetened Muriatic acid, &c. Should there be much viscid phlegm in the throat.

with difficult expectoration, an Emetic is the best gargle, & by its operation clearing the fauces. I have seen patients who were almost suffocated in the latter stages of the disease, rescued as it were from the grave, by this use. The regimen should harmonize with the remedies. Free ventilation, duly regulated; careful attendance on the part of the Physician, close watching and much care, are necessary to conduct this patient, to a successful termination of the case. In the sequel of this disease, often occur, enlarged glands — Thoracic & abdominal derangements — Dry harsh skin — Dropsical effusions in the cavities — Anasarca — Albuminous & scanty urine — Ulcerations of the internal ear, &c. Many in these last stages die suddenly. The treatment in these cases should be, moderate purging — Stimulating diuretics — Rouse up the action of the Skin — Give preparations of Iron or Quinine with a good generous diet. — Belladonna as a preventive was introduced by Hahnemann of Leipsic.

Other European authorities have attested to its value. By giving it in small doses it produces redness & heat of throat with a scarlet eruption if continued. Camphor bags have been worn by children with the same view. Whether any preventives do any good, I am unable to determine. Keep the child affected from the rest of the family;— Cleanliness, with free ventilation, are all proper preventives. But as I have met the disease, it appears to be more epidemic than contagious, & governed more by the laws of epidemics, than by any other phenomena.

XI.

Dissertation on Scrofula.

By

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Scrophula.

This is a disease which occurs mostly in cold, damp atmospheres, where the weather is subject to frequent and great changes. Its locality according to the books is in latitudes between forty five and sixty degrees. In point of fact however it is frequently seen much lower down than this. It is not unfrequent in Virginia and the Carolinas.

Definition or Appearance.

Scrophula is that state or condition of the body characterized by indolent glandular tumors, more commonly on the sides of the neck, under the chin and under the ears. Although the tumors usually appear about the neck, they may appear in any of the glands of the body. They suppurate slowly discharge feably, but heal with great difficulty. The matter discharged is peculiar, differing widely from pus or serum, being a white substance resembling coagulated milk or cheese curd; but does not excoriate the part

over which it passes. The usual time for the developement of scrophula is from three to ten years of age. Sometimes however it makes its appearance much earlier and in other cases later in life. In some instances decided scrophulous tubercles have been detected in the messentery of still born infants. In others it is not developed until the patient is twenty five or thirty years of age. This disease is more likely to make its appearance in the winter or spring, particularly in February and March.

We frequently hear it said that an individual is of a scrophulous diathasis. By this is meant, a person of a lax habit, delicate complexion, comely features, timid lips flaxen hair, acute understanding, quick perception but feeble constitution. These together indicate a predisposition to the disease, or a scrophulous diathesis.— There are certain causes which favour the developement of scrophula whether or not the person is constitutionally predisposed to it.— Besides an ever changing climate and par-

ticular localities, any circumstance that may tend to weaken the constitution, if long continued may be the remote cause of the disease in some persons and the exciting cause in others.
Breathing impure atmosphere, drinking impure water, living upon food that is too rich and imperfectly masticated may be a predisposing or proximate cause by reducing the strength of the digestive powers. But more frequently, by taking food that is innutricious and in small quantities, and thereby reducing the system below the healthy stand. —— The graham system of living while it may have had a good effect in some diseases if not carried too far, has without doubt tended very much to develope scrophula in persons predisposed to it and to engender it where there was no such predisposition.
It is probable also that the introduction of coal stoves into tight rooms, instead of wood fires upon the hearth has tended to the same result.
Improper clothing. The manner in which clothes are made as well as the materials of

which they are made has much to do with scrophula. Fine cotton or silk stockings and light soled pumps worn in the winter, lacing about the waist with snare-drum tightness and exposure of the upper part of the chest to the chilling air of autumn, winter or spring are precursors of scrophula and tisis.—

When schrophula is once contracted it is frequently transmitted from parent to child and seems to increase in its distinctive effects as it passes from generation to generation if the posterity remain in the same localities and follow the same occupations and habits.—

Symptoms of developement.— When this disease is first developed, there will be seen several small moveable tumors about the neck and chin. These tumors continue to increase in size, sometimes becoming very large and painful, rendering the neck stiff long before there is any suppuration or even change of colour. In other instances the eyes are attacked giving rise to ophthalmia, ulceration of the tarsi,

opacity of the transparent cornea, and inflamation of the tunica adnata. The tonsils also become tumefied and very troublesome.—

Sometimes the bones and joints are attacked and become the seat of the disease.— In these cases, especially where the joints are effected there is tumefaction of the surrounding parts and great pain upon motion without much increase of heat or colour. The pain and swelling continue to increase, the muscles waste away, matter forms and is discharged at small openings, or is absorbed & carried into the circulation which soon brings on hectic fever and unless the limb is removed the patient gradually sinks under the disease and loses his life.

Upon post mortem examination the different glands and internal viscera are found to be in a diseased condition. The mesentery is thickened and the glands enlarged; the kidneys enlarged and ulcerated, the ureters have the appearance of large cords or tendons, the walls of the

bladder thickened and hard; and small hard tumors may be found any where.-

The lungs are sometimes found in various stages of disease. One part is seen studded with tubercles not larger than millet seed, well defined, and under a myscroscope appear organized, containing a matter resembling cheese. Another portion (have they are cysts) of a larger size and the matter (in them) is softer and mixed with pus. In still another portion the tubercles are seem to have approximated and opened into each other forming cavities, and are in various stages of suppuration and exfoliation. When the joints of the limbs or spine have been long effected they have been found denuded of their cartilages, the bone itself in a state of suppuration, its strength greatly diminished and its structure easily broken up.

Treatment. The cure of scrophula is effected with difficulty. It is not unfrequent that there is an appearance of a radical cure and the disease does not show itself for several years, when suddenly from exposure to wet and cold it reappears and progresses with great obstinacy. So that we may always fear that instead of curing the disease it may afterwards prove that we have only driven it into some secret lurking place where it lies burrowed out of sight, waiting some favourable opportunity when the system is debilitated, to come forth and destroy the life of the patient triumphing over medical skill and medical men.

No doubt but scrophula is sometimes cured, and usually the symptoms may be greatly alleviated. A cure then should always be attempted, and vigerous measures kept up for a long time. And the patient should be distinctly told not to expect an immediate cure.

Although it is sometimes the fact that judicious medication has an immediate effect to invigorate the system and carry off the disease, still this is not ordinarily to be expected. In treating scrophula the Physician should direct his remedies to two objects, local, and constitutional. A general alterative course will at once suggest itself. The patient should be immediately placed in a warm, free and dry atmosphere, where he will be surrounded by new scenes, that his mind may be taken off from his disease as much as possible. All kinds of improper diet should be avoided and a free nutricous diet substituted for a feable one. Beef steak and fowls thoroughly masticated, puddings rise milk, eggs &c. in such quantities as the appetite suggests and the stomach can bear without being overloaded. Nothing however should be eaten except at regular meals and the hour for these

should not be passed over. Exercise in the open air every day is of primary importance to such an extent that the patient may feel the need of rest but not be fatigued. If the patient be too feable to take such exercise, external friction applied for a considerable length of time in the morning may be substituted. Sea bathing, cold shower bath if the system will respond to it will be of signal benefit. Also bathing the feet not in tepid water, but in water sufficiently hot to make a decided impression and then dressed in warm wool en stockings. It may be well here to speak of, Clothing in general. This should be light but warm, and of such kind and fashion as to give the body and limbs full and easy motion, while it completely secures the patient from the cold. Flannels worn next to the skin should be insisted upon, and particular attention should be paid to boots and shoes.

Evening air also should be carefully avoided, and to secure this the patient should retire early at night and rise early in in the morning. ~~Medi~~

Medication. The different preparation of Iodine, Arsenic and Iron among the minerals are most to be relied upon, Mercury not being as safe in this disease as some other alterative. Among the vegitables, Conium, Leontodon Taraxacum, Sasaparilla, Princes Pine Sanguinaria are efficient alterative or Deobstruents and will be particularly serviceable in a scrophulous diathesis.— Tonicks also are strongly indicated in the treatment of this affection. Cinchona in substance if the stomach will tolerate it may be given Also Sulphate Quinine two parts, Sulphuric acid one part disolved in pure water, and of the solution in such quantity so that the patient may take from five to ten grains of the Quinine in twenty four hours.

This will give tone and energy to the system and thereby enable it to throw off the disease. Colombo, Cascarilla, Gentian, Myrrh, Guaiacum and other bitter tonics have also been highly recommended.—

Various kind of ~~topical~~ topical dressings at different times have been in high repute. Volatile liniment, the fresh bile of the Ox Mercurial ointments, blisters and several of the escharotics are among them.— At the present time the Iodide of Potassium two parts Iodine one part, with simple cerate made of sufficient ~~strength~~ as slightly to excoriate the part is very much ~~relied~~ relied upon.

If pus collects in the tumor it is well to make an external opening with a lancet or bistra. If the matter is easily discharged the lips of the wound should carefully be brought together that it may heal by the first intention If the opening does not heal immediately warm poultices and other stimulants may be used to promote suppuration & granulation.

If a fungus growth of granulations appear Alum or Nitrate of Silver should be applied to suppress them, or the ulcer may be washed with a weak solution of Nitric Acid, Acetate of Lead, or a decoction of Oak bark and then covered with a plaster of simple cerate

Sometimes Scrophulous tumors are exceedingly indolent, so that it is very difficult either to scatter them or make them suppurate. In these cases Galvanism and Electricity has sometimes proved beneficial. Also leeches applied to the effected part, or a dry cup applied to the tumor for an hour two or three times in a day. When the cup is taken off some stimulating plaster or cataplasm should be applied. When it has sufficiently suppurated it should be promptly opened with a lancet or bistra and then treated as above. Seatons have sometimes been been employed as counter irretants with marked advantage.

It has been recommended on the

continent of Europe that a solution of the Sulphate of zink grs. VIII to the ℥j of water be injected into the ulcerated cavity. It is stated that in many cases healthy inflamation has immediately followed terminating in the adhesion of the opposite walls and no return of the disease has succeeded.

E. S. Winter

Yale College New Haven Conn. Jan. 16th 1845

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